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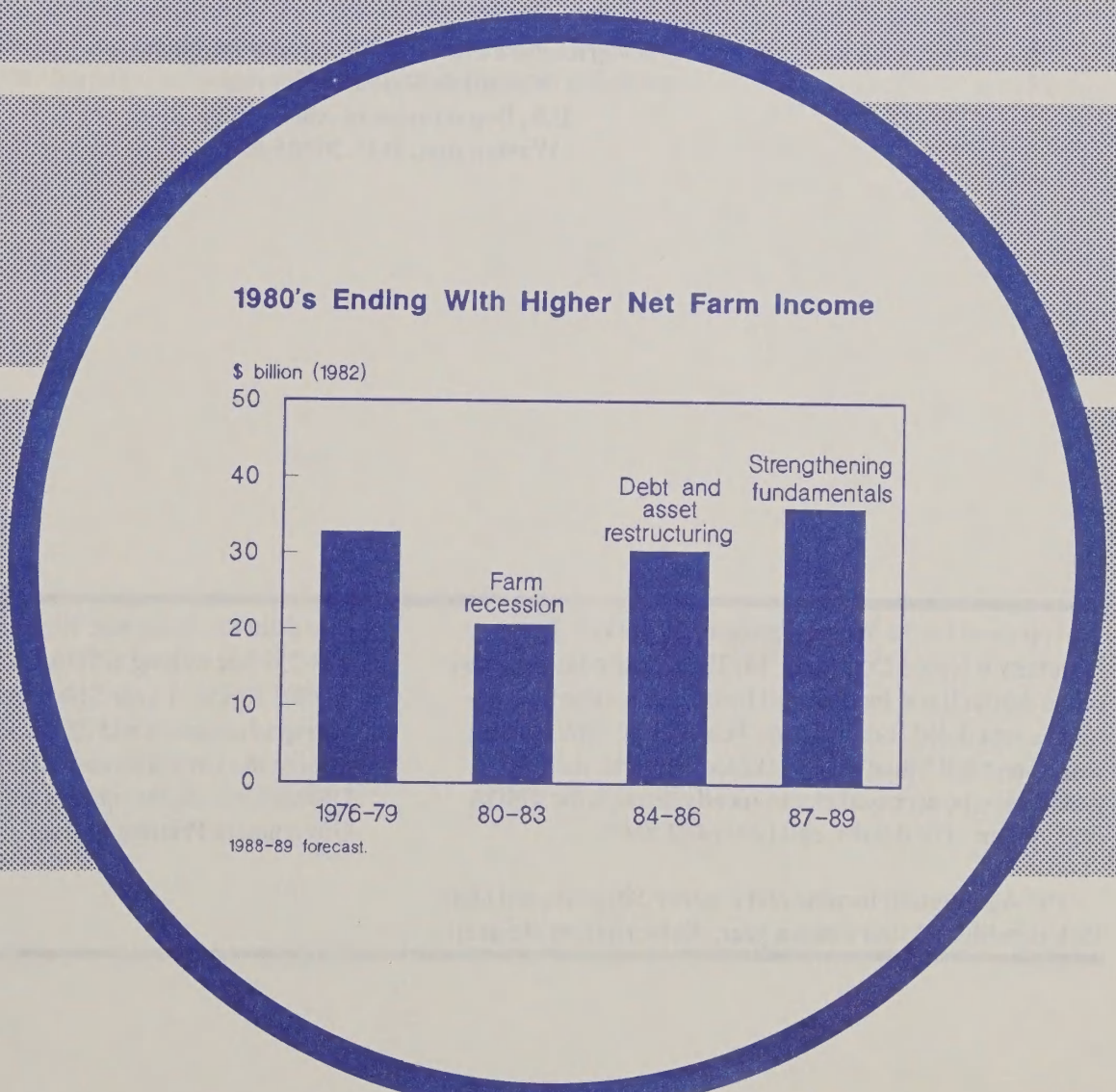
Situation and Outlook Report



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GLOSSARY OF TERMS IN FARM INCOME AND FINANCE

Net cash income--is the difference between cash receipts, farm related income, and direct Government payments and cash expenses. This cash-based concept measures the total income farmers receive in a given year, regardless of the year in which the marketed output was produced. It indicates the availability of funds to cover cash operating costs, finance capital investments and savings, service debts, maintain living standards, and pay taxes.

Net farm income--is the difference between gross farm income and total expenses. This accrual-based concept measures the profit or loss associated with a given year's production. Additions to inventories are treated as income. Nonmoney items such as depreciation, the consumption of farm-grown food, and the net imputed rental value of operator dwellings are included.

Net cash flow--is the sum of: gross cash income, the change in loans outstanding, net rent to nonoperator landlords, and the net change in farmers' currency and demand deposits; minus gross cash expenses and gross capital expenditures. This financial indicator measures cash available to farm operators and landlords in a given year. It indicates the ability to meet current obligations and provide for family living expenses, and to undertake investments.

Debt/asset ratio--measures both proportional owner equity in the farm and the financial risk exposure of the operation (the extent to which the farm's assets have been borrowed against). It is calculated as total debt outstanding as of January 1, divided by the farmer's estimate of the current market value of owned assets of the farm business.

Equity level--measures net worth. It is the hypothetical balance that would remain from the sale of assets and paying off existing debt. It is calculated as total operator assets minus operator debt outstanding.

Current and inflation-adjusted dollars--In this report, dollar values of income, expense, asset, and debt items, unadjusted for the effects of inflation, are referred to as current or nominal dollars. Current or nominal figures, which indicate the purchasing power prevailing in the cited year, do not allow for fully accurate comparisons across time. To allow for meaningful comparisons across time, adjustments for the effects of inflation are made. Adjusted figures use a 1982 base and are interchangeably referred to as real, constant dollar, or inflation-adjusted.

Highlights

The farm income situation for 1989 appears to be relatively strong:

- Crop and livestock receipts are projected to be up slightly from 1988's record-high level.
- Net cash income may decline as farmers rebuild drought-depleted inventories, but still be fourth highest of record.
- Net farm income is expected to rebound as yields return to more normal levels and the area planted to program crops increases.
- Government payments will be down 20 to 25 percent and cash expenses up moderately.

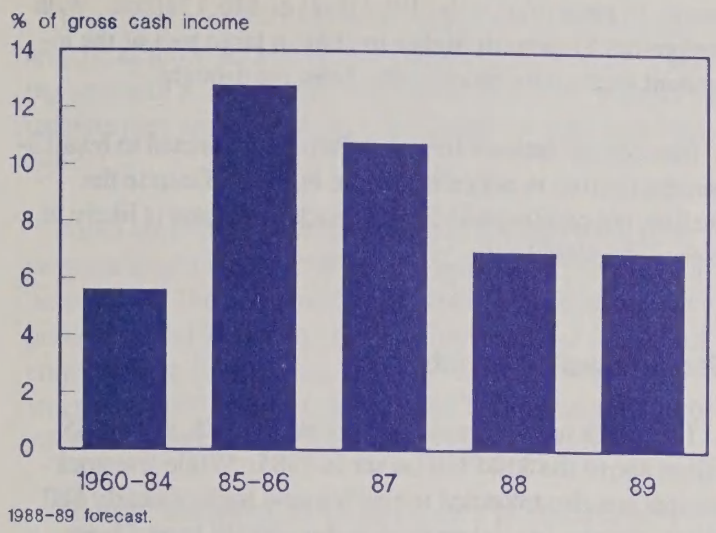
Since net farm income is a measure of the value of current production, it will usually decline in a drought year. Net farm income for 1988 will likely decline nearly $7 billion from 1987, the highest level since 1973. Despite this 16-percent decline, 1988 net farm income could be the second highest. A return to more normal yields in 1989 would push net farm income back toward the 1987 level of $46.3 billion.

Income for Crop Producers May Slip in 1989

The effects of the drought will still be very much in evidence in 1989. Crops will be planted on 25 to 30 million more acres as the acreage reduction program requirements for wheat and corn producers are reduced. Even with the increased production, prices for both crops are expected to remain relatively high. The result will be an increase in crop receipts, perhaps as much as 2 percent.

The drought will have pronounced effects on Government payments in 1989. The March 1989 feed grain deficiency payments will be based on the average price over the first 5 months of the marketing year. Prices for corn and sorghum during this period will be much higher than was anticipated when advances were made in early 1988. Even though advances were only 40 percent of the anticipated deficiency rate, they will make up a large portion of total payments, leaving relatively little to be paid in 1989. Deficiency payments in 1989 will be reduced further by the relatively high prices for wheat, barley, and oats throughout the year. Because most disaster payments are expected to be disbursed in 1988, drought relief payments are not likely to play an important role in 1989.

Figure 1
Government Payments Declining



1988-89 forecast.

Cash expenses for crop farms will increase roughly 6 to 8 percent. While expenditures are likely to be higher for nearly all items, the largest increases are expected for inputs directly related to the number of acres planted. Expenditures on seed are projected to increase nearly 20 percent. Large increases are also projected for fertilizer and pesticides (14 to 18 percent) and for fuels (11 percent).

Because of higher expenses and inventory rebuilding, crop farmers are likely to see a decline in net cash income from the relatively high levels of 1988. With gross cash income (cash receipts plus direct Government payments) down as much as 3 percent from 1988, the expected increase in cash expenses would lead to a fall of 16 to 18 percent in net cash income for these producers.

Livestock Receipts Stable

Net cash income for livestock farms is also projected to decline in 1989. Cattle and calf receipts are expected to remain at about the 1988 level but hog receipts are likely to rise by 9 to 11 percent. Slight increases in poultry and dairy receipts will push livestock receipts to a new record, albeit only slightly above this year's level.

Many livestock producers also sell some grains and a small decline in direct Government payments to these producers will slightly reduce gross cash income. A small increase in cash expenses is projected for livestock producers, and coupled with slightly lower gross cash income, could result in a 10- to 12-percent decline in net cash income.

Farm Financial Position Stabilizing

The overall financial position of farmers should remain stable in 1989 (in real terms) with the increase in farm net worth about matching the increase in inflation in the U.S. economy. Asset growth in current dollars will be broad-based:

- Increases of as much as 5 percent for livestock, machinery, and financial assets.
- Following this year's 6-percent gain, a 2- to 4-percent increase in land prices will reflect some weakening of commodity prices during the next 12 months.

Farm Debt Reverses Decline

A slight increase in farm debt of $2 to $5 billion is projected for 1989, reversing a 5-year trend of annual reductions. Retirement of farm business debt continued through 1988, with declining real estate debt offsetting the slight increase in nonreal estate debt. Producers in less severe drought areas benefited from higher commodity prices and near normal production levels. Apparently these higher-than-anticipated cash incomes were applied to further debt retirement.

Farm Credit System loans should increase in 1989 for the first year since 1982. Bank farm debt is expected to increase $1 to $3 billion in 1989. Farmers Home Administration debt should fall by at least $2 billion. This FmHA debt reduction could be substantially higher if large amounts of problem loans are restructured or written off.

Farm real estate loans should increase slightly in 1989, as stable or improving land values stimulate renewed interest by financially sound farmers seeking to expand their operations.

Demand for nonreal estate loans should also grow as increases in planted acreages push up expenditures for most inputs. Nonreal estate debt outstanding should increase by $2 to $3 billion in 1989.

Rates of Return and Net Cash Flow Steady

In 1989, the rates of return on farm assets and on farm equity from current income are expected to remain near the 1988 levels of 4.4 and 2.9 percent, respectively. The total real rate of return on farm assets should average between 3 and 5 percent.

Cash flow after interest is forecast at about $50 to $53 billion in 1989, slightly below the 1988 record. This is still markedly higher than the 1984-86 average of $31 billion.

DROUGHT EFFECTS ON 1988

One of the most important events shaping income this year and in 1989 is the drought. Higher prices due to the

drought helped push up 1988 receipts enough to maintain net cash income near the record of $57.1 billion set in 1987. In contrast, net farm income is expected to fall to about $39 billion, a drop of over $7 billion. Net cash income in 1989 is projected to fall from the level of the previous 2 years as drought-induced high prices will result in a substantial decline in Government payments.

Net Cash Income Higher for Crop Producers

Forecasts made early in 1988 indicated that crop receipts would improve relative to 1987. The drought, with its strengthening impact on the prices of both food grains and feed grains, pushed receipts even higher. For example, May unpublished forecasts for 1988 crop receipts and prices called for increases of 7 percent and 5 percent, respectively. The current forecast is for a 12-percent gain for receipts and 19 percent for prices. A large share of the $7-billion gain in receipts can be attributed to the drought.

Higher prices for program crops translate into lower deficiency payments. However, 1988 Government payments are expected to fall only $2 billion dollars because:

- The major disbursement of deficiency payments occurs approximately 6 months into the marketing year. For wheat, barley, and oats, this payment is in December while for corn and sorghum it is in March. Thus, only the 1988 small grain deficiency payments will be significantly reduced by the drought.

- Federal drought assistance will provide an estimated $3.9 billion to affected farmers. Roughly three-quarters of these payments were disbursed in 1988. While the exact amount is undetermined, drought relief payments could add $3 billion to Government payments in 1988.

On the expense side, the drought had little impact on crop producers. By the time the drought emerged, most production expenditures had already taken place. The decline in yields reduced harvest and post-harvest expenses. These reductions were offset to some extent by higher expenses for Southern producers who planted a second crop.

Record Livestock Receipts

The drought's impact on livestock producers' receipts and expenses in 1988 is the reverse of the impact on crop producers: receipts were not greatly affected but expenses rose significantly. Livestock prices, especially for cattle, were very strong in the first part of 1988 and remained relatively high through the summer and fall. As a result, 1988 livestock receipts are likely to be $80 billion, up from last year's record of $76.2 billion.

Total cash expenses for livestock farms are projected to rise nearly $8 billion over 1987. Feed expenditures could increase 35 percent over the 1987 level of $16.1 billion. With feed prices 31 percent higher in 1988, a large part of the increased feed expenditures came from the drought.

The bottom line for livestock farms is expected to be a 13-percent decline in net cash income in 1988. Despite the decline, net cash income for livestock producers is likely to exceed the 1985 level.

Record Cash Receipts

Total cash receipts may set a record in 1988, almost $5 billion above the $144 billion set in 1985. While livestock receipts are also expected to reach a new high of nearly $80 billion, the rise in total receipts is due largely to an 11-percent increase in crop receipts.

Crop Receipts

Before the drought, a modest 5-percent increase in crop prices was forecast. By the end of the growing season, with reduced supplies and relatively strong demand, the prices received index for crops had risen 19 percent.

Leading the overall price increase for crops are food grains (up 33 percent), oil crops (up 38 percent), and feed grains (up 41 percent). With the notable exception of corn, the increase in prices exceeds the decline in production, thereby boosting receipts. High stocks of corn going into the drought dampened the price runup. Even so, many corn producers will have higher 1988 receipts because grain stored from previous crops was sold at the higher prices induced by the drought.

Continued Strength in Livestock Sector

The increase in 1988 livestock receipts could be roughly 5 percent, a rise for the third consecutive year. Paced by an 11-percent gain in cattle and calf receipts and 13-percent more for poultry and eggs, this moderate increase comes on top of 1987's record of $76.2 billion.

The farm price of cattle is expected to rise 16 percent this year while production should be down less than 1 percent. Higher receipts for poultry are expected because of increases in prices and production. Hogs and dairy are the only major livestock categories with projected declines in 1988 cash receipts. Quarterly pork production was higher this year than in each of the corresponding quarters in 1987. Overall, production is expected to be up 9 percent. Farm prices, on the other hand, are likely to be down over 19 percent from 1987.

CASH RECEIPTS

Led by increases in wheat and corn, 1989 crop receipts may be as much as 2 percent above this year's level. Coming on top of a 12-percent increase in 1988, next year's crop receipts may approach the levels attained in 1985 and 1980-1982.

More normal crop yields and lower acreage reduction program requirements (ARP) are expected to increase crop production. The combination of export growth and lower production led to a cut in ARP requirements for wheat and corn program participants. The ARP for the 1989/1990 wheat crop is 10 percent, down from 27.5 percent. The corn ARP has been reduced from 20 percent to 10 percent.

Higher production levels will reduce prices. However, low stock levels entering the new crop production season will prevent prices from falling very far from this year's higher levels. The prices received index for food grains is expected to be down marginally or unchanged from this year. A larger decline in the prices received index for oil crops is expected (in the neighborhood of 6 percent), while prices received for feed grains are expected to rise by as much as 3 percent.

Livestock Receipts Stable in 1989

Livestock receipts are expected to be little changed from this year's record level as cattle and hog prices strengthen from fourth-quarter 1988 levels. Cattle receipts are likely to remain stable while hog receipts should rebound. Cattle prices may increase 7 percent, while production declines 7 percent. Hog receipts are expected to rise next year, as farm prices more than offset a very small decline in pork production.

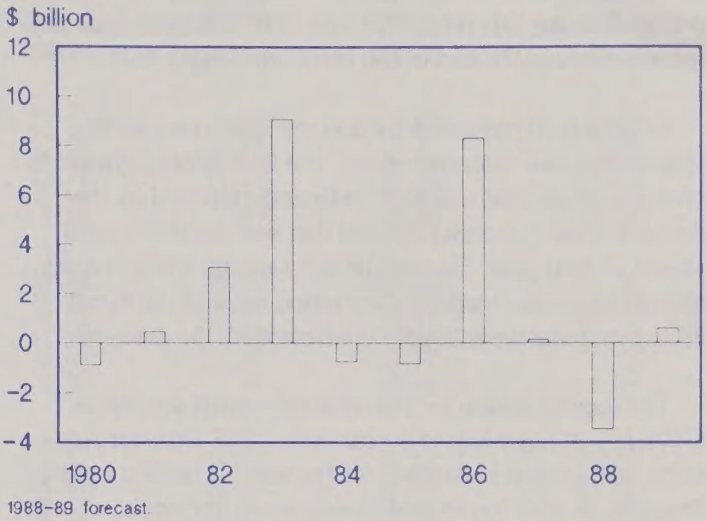
Poultry and egg receipts are expected to rise slightly. This rise can be attributed to relatively strong increases for eggs and turkeys. A decline in the farm price of broilers will nearly cancel an increase in broiler production.

GOVERNMENT PAYMENTS

Direct Government payments will decline this year and next due to the drought and to legislated changes in farm program target prices and loan rates. The decline for 1988 is likely to be just over $2 billion or 13 percent. The decline for 1989 is expected to be much larger -- on the order of 25 percent. Two factors explain why the decline during the 1988 drought is smaller than it is expected to be next year.

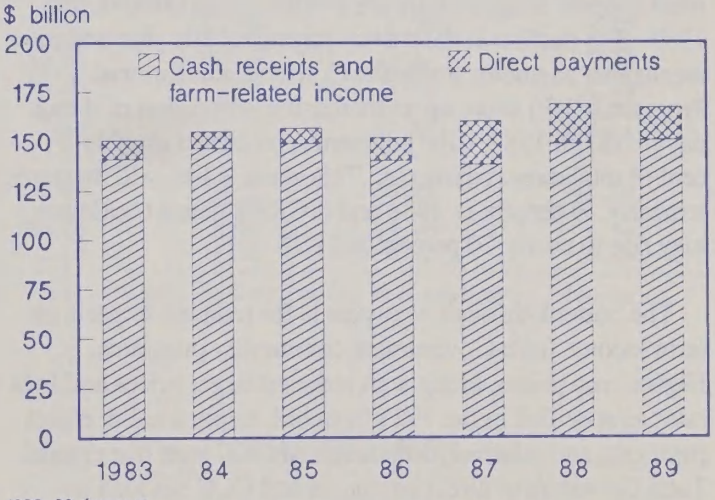
First, deficiency payments, comprising the bulk of direct Government payments in recent years, are disbursed at three different times. Advances are paid at signup, based on a por-

Figure 2
Net CCC Loans



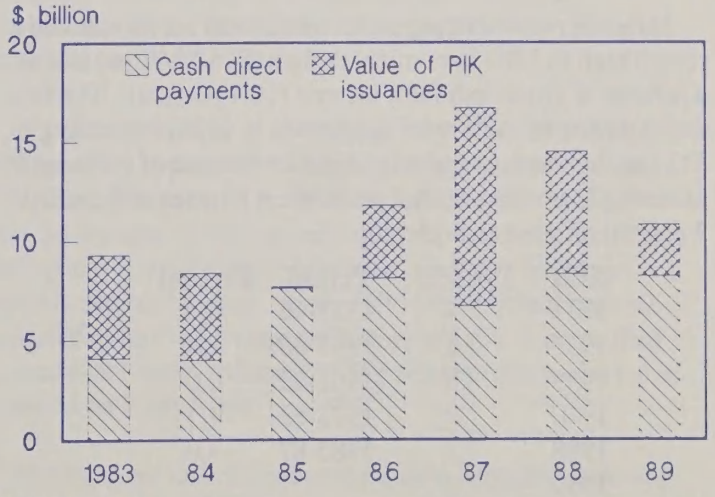
1988-89 forecast.

Figure 3
Gross Cash Income



1988-89 forecast.

Figure 4
Direct Government Payments: Cash and PIK



1988-89 forecast.

tion (40 percent for 1988/1989 crops) of the anticipated payment rate. At the end of the first 5 months of the marketing year, a payment is made based on the average price for this period, less any advances received. The third and final payment is made at the end of the entire marketing year.

Government payments for a given crop year can be spread over two calendar years. The first direct payment to corn producers that will be significantly affected by the drought is the 5-month payment that will not occur until March of next year. Except for the 5-month wheat, barley, and oat payments made in December, most of the direct 1988 payments were largely unaffected by the drought.

The second reason for the relatively small decline in Government payments this year is the 1988 Disaster Assistance Act, passed in August, for farmers hit hardest by the drought. In addition to feed assistance to livestock producers and 1989 price assistance to dairy producers, the Act provides payments to farmers who lost crops in 1988.

Other changes in the level and composition of Government support of agriculture are evident in the outlook for 1989. The decline in deficiency payments this year and next means that payments under the Conservation Reserve Program (CRP) make up an increasing proportion of direct payments. In 1987, CRP payments comprised roughly 8 percent of total direct payments. This share is likely to increase to nearly 10 percent in 1988 and if CRP signups continue, may rise to nearly 20 percent in 1989.

The outlook through next year is for reduced impacts on farm income from Government commodity programs. Higher crop prices, along with reduced target prices and loan rates as specified in the 1985 farm bill, imply smaller direct payments and relatively low levels of CCC loan placements. Total Government direct payments and CCC net loan activity were nearly $22 billion dollars in 1987, compared with about $12 billion this year and next.

Who is Receiving Government Payments?

Direct Government payments to the farm sector reached a record high in 1987 in nominal dollars ($16.7 billion) and as a percent of gross cash farm income (10.4 percent). The first direct payments to farmers were made in 1933, amounting to $131 million and comprising about 2.4 percent of gross cash income. There have been 7 years when payments exceeded 7 percent of gross cash income:

Year	Percent	Period	Percent
1933	2.4	1933-46	4.3
1935	7.5	1947-60	1.4
1939	8.8	1961-72	6.0
1940	7.9	1973-82	1.5
1968	7.2	1983-87	7.0
1969	7.2		
1986	7.8		
1987	10.4		

Distribution and Level of Payments

Data from the 1987 Farm Costs and Returns Survey were used to examine the level and distribution of direct Government payments. Survey respondents were asked to include all cash payments plus the face value of PIK certificates received from the Federal Government for participation in farm-related programs. Payment and related data were grouped by farm economic class (farm sales plus Government payments), production specialty, region, acres operated, and financial position.

By economic class--Nearly 80 percent of total direct payments went to farms in the economic classes of $40,000 to $499,000. They comprised about 31 percent of all farms and about 60 percent of those reporting payments. They had about 77 percent of the sales of major program eligible commodities.

Farms in the $500,000 or above economic class received over 10 percent of total payments and had the highest average payment per recipient. They also were responsible for about 15 percent of the total sales of major program eligible commodities and comprised about 3 percent of all farms receiving payments.

Farms in the economic class of $9,999 or less received 1.6 percent of total payments and had 1 percent of total program commodity sales.

By production specialty--Farms specializing in the production of cash grains, and beef, hogs, and sheep received about 77 percent of total payments, had nearly 81 percent of program commodity sales, and comprised about 74 percent of all farms reporting payments. Cotton farms received the highest average payments ($38,294) per reporting farm. They received nearly 8 percent of total payments and had nearly 11 percent of major program eligible commodity sales. Dairy producers received about 7 percent of total payments, reflecting in part the influence of the dairy herd buyout and indemnity programs in 1987.

By region--On a regional basis, the majority of payments (67.4 percent) went to farms located in the Lakes States, the Corn Belt, and the Northern Plains. Farms in these three regions accounted for about 68 percent of total program commodity sales and comprised nearly 66 percent of all farms reporting payments. The highest average payments went to farms in the Pacific region.

By acres operated--The distribution of payments by acreage operated most clearly reflects the production basis of many current Government programs. As might be expected, there is a close correspondence between the proportion of total payments received and the contribution to sales of major program eligible commodities at all acreage levels. Farms operating 501 or more acres in 1987 received nearly

Table 1--Distribution and level of Government payments in 1987

Item	Payments per reporting farm	Percent of total government payments	Percent of major program commodity sales 1/	Percent of gross cash income	Percent of farms reporting payments	Percent of all farms
All farms	$18,017	100.00	100.00	100.00	100.00	100.00
Economic class:						
$500,000 or over	68,705	10.21	14.75	3.46	2.68	1.70
$250,000 to $499,999	46,416	21.31	24.23	10.36	8.27	4.00
$100,000 to $249,999	26,959	36.30	34.21	12.68	24.26	11.88
$40,000 to $99,999	14,350	21.65	18.74	12.22	27.19	15.24
$10,000 to $39,999	6,305	8.89	6.99	9.10	25.41	23.34
$9,999 or less	2,415	1.63	1.08	5.59	12.19	43.85
Production specialty:						
Cash grain	22,232	60.07	69.26	23.24	48.68	21.66
Cotton	38,294	7.76	10.76	19.81	3.65	1.37
All other crop	12,799	6.50	5.13	3.45	9.15	17.76
Beef, hog, sheep	12,080	17.22	11.35	5.93	25.68	43.01
Dairy	12,034	7.18	2.93	3.72	10.76	9.19
All other livestock	10,946	1.26	0.57	1.04	2.08	7.01
Region:						
Northeast	9,378	1.49	1.29	1.78	2.86	7.94
Lake States	15,308	13.49	9.34	11.15	15.88	11.69
Corn Belt	19,373	34.23	43.47	14.29	31.83	21.46
Northern Plains	19,481	19.66	15.31	13.84	18.18	8.81
Appalachia	7,898	3.62	3.82	4.31	8.25	13.60
Southeast	14,191	3.47	3.23	4.57	4.40	6.78
Delta	25,747	4.72	7.00	8.74	3.31	5.07
Southern Plains	19,339	8.11	5.72	9.90	7.56	10.95
Mountain	24,384	7.33	6.52	9.17	5.41	6.01
Pacific	30,176	3.89	4.30	3.00	2.32	7.69
Acres operated:						
2,001 acres or more	49,868	17.41	17.43	10.23	6.29	3.47
1,001 to 2,000 acres	36,377	24.66	27.25	15.05	12.21	5.49
501 to 1,000 acres	24,446	29.69	30.01	13.36	21.88	10.37
251 to 500 acres	12,815	17.95	16.24	8.87	25.23	14.79
101 to 250 acres	6,363	8.32	7.58	5.42	23.54	24.51
100 acres or less	3,285	1.98	1.49	1.10	10.84	41.36
Financial position:						
Favorable	18,736	62.61	64.82	8.87	60.21	48.50
Marginal income	10,946	10.31	9.11	9.99	16.97	36.57
Marginal solvency	23,172	20.45	20.28	8.92	15.90	8.16
Vulnerable	17,258	6.63	5.79	12.53	6.92	6.78

1/ Includes 1987 sales and new CCC crop loans for corn, wheat, rice, cotton, barley, oats, and soybeans. Source: 1987 Farm Costs and Returns Survey, USDA.

72 percent of total payments and accounted for about 75 percent of major program eligible commodity sales. This group of farms constituted about 19 percent of all farms and about 40 percent of all those receiving a Government payment in 1987.

By financial position--Farms were placed in one of four categories based on their net cash farm income (NCFI) levels and their debt-to-asset ratios (DAR) at the end of 1987. Farms in a favorable position had a positive NCFI and a DAR of 0.40 or less. Farms in a marginal income position had negative NCFI and a DAR of 0.40 or less. Farms in a marginal solvency position had a positive NCFI and a DAR above 0.40. Farms in a vulnerable position had negative NCFI and a DAR above 0.40.

Based on these categories, payments were again distributed roughly in proportion to the proportion of total sales of program eligible commodities. For example, farms classified as being in a vulnerable position in 1987 accounted for about 6 percent of program eligible commodity sales and received nearly 7 percent of total payments.

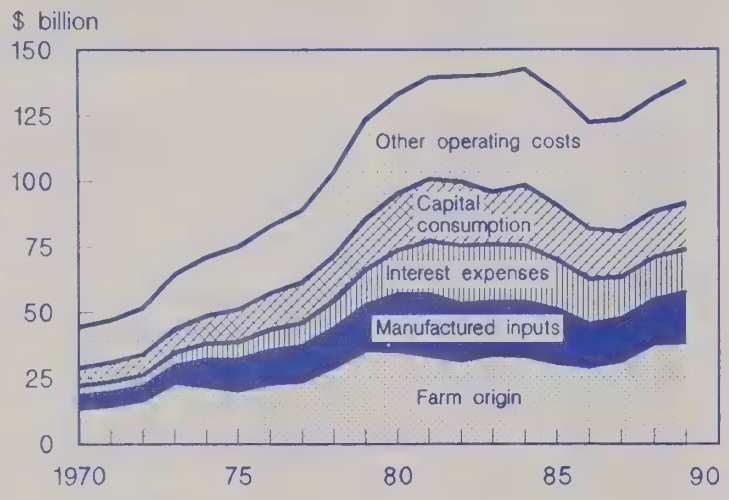
EXPENSES

Cash expenses rose 8 percent in 1988 and could rise by 4 to 6 percent next year. The big story in 1988's expense picture was the 35-percent increase in feed. Prices paid indices rose for all expense categories in contrast to 1987, which saw price declines for feed, fertilizer, and chemicals. However, with the exception of feed and fertilizer, price increases were small.

Fertilizer prices were up roughly 10 percent in 1988 but with quantity applied down slightly, expenditures rose only 8 percent. The price of feed, on the other hand, climbed over 30 percent. With less culling of the livestock herd than anticipated when the drought started, feed purchases apparently did not slacken. As a result, feed expenditures are expected to be over 35 percent higher in 1988. Larger feed expenditures alone account for 73 percent of the projected increase in cash expenses.

The increase in 1989 cash expenses is expected to be not only smaller than 1988 (5 percent vs. 8 percent) but also

Figure 5
Farm Production Expenses



1988–89 forecast.

Figure 6
Prices Paid and Received by Farmers

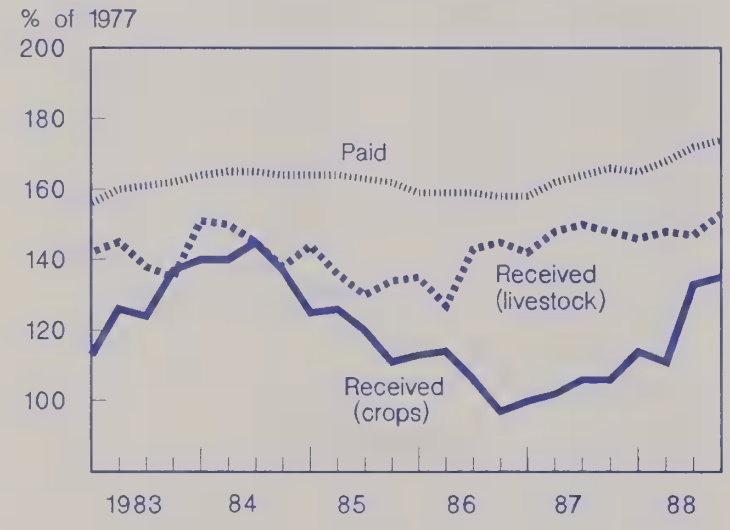
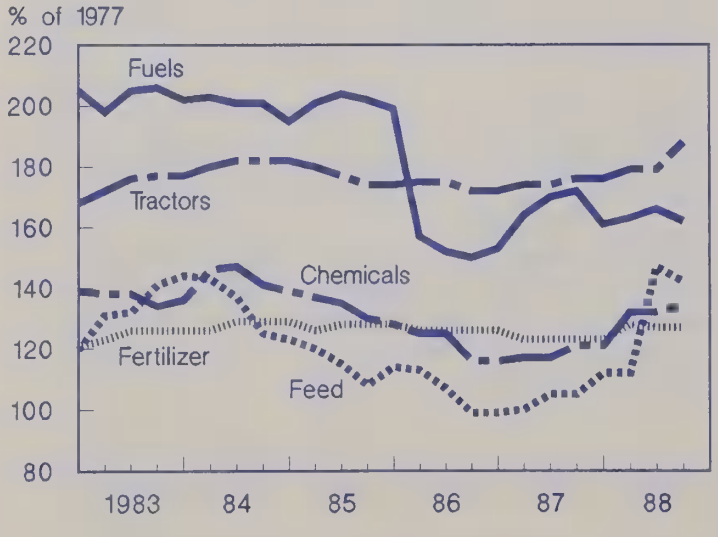


Figure 7
Prices Paid for Major Production Inputs



more uniform. As in 1988, prices paid indices are expected to rise for all categories of farm expenditures. However, most prices are expected to increase less than 7 percent, except for seed with a projected increase of 10 percent.

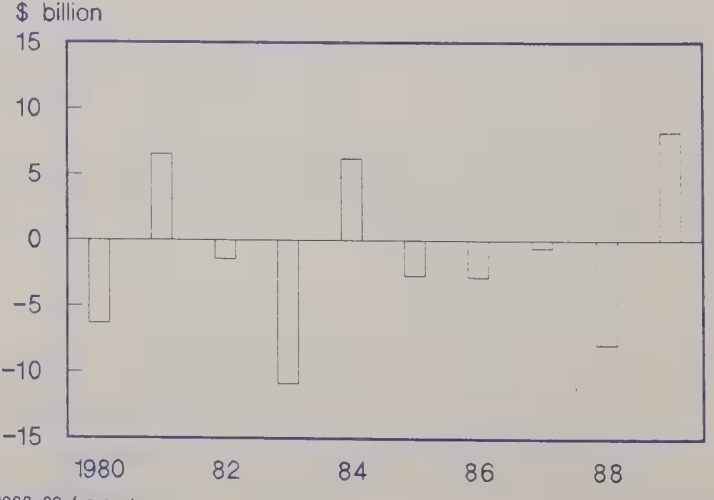
Seed prices are expected to rise because of the drought-reduced supply while 25 to 30 million more acres could be planted to crops. Higher prices and demand translate into a large increase in seed expenditures.

More planted acres are also expected to lead to large increases in fertilizer, pesticide, and fuel expenditures. Prices paid for these inputs are projected to be up 2 and 6 percent but expenditures for each should increase more than 10 percent. Expenditures on seed, fertilizer, pesticides, and fuel will account for nearly 45 percent of the total increase in cash expenses.

Changes in expenditures on feed and feeder livestock are expected to be about offsetting. Feed expenditures will rise slightly from the already high levels of 1988, but by less than 4 percent. The 6-percent decline in feeder livestock expenditures is relatively larger because feeder livestock expenditures are usually only about two-thirds of feed expenditures.

Next year is likely to be the first time since 1982 that both short-term and real estate interest expenditures increase. With more acres planted and across-the-board higher input prices, short-term debt is likely to increase between 2 and 4 percent. Larger expenditures on short-term interest would represent the second straight increase following 5 years of reductions. Higher real estate interest expenditures are expected as land values increase again in 1989, demand for land strengthens, and interest rates move up slightly.

Figure 8
Value of Inventory Adjustments



1988–89 forecast.

REGIONAL COMPARISONS

The severity of the drought varied considerably across the country and affected regional income pictures differently. While all five major regions expect higher receipts and lower Government payments, only four of the five may show an increase in net cash income in 1988.

In two of these regions -- the Northeast and South Central -- livestock receipts comprise almost two-thirds of cash receipts. The Southeast increased its share of total wheat and soybean receipts. Income in the West is expected to remain essentially unchanged. Most farms in the West, excluding wheat, are irrigated and would not suffer severe yield losses due to a drought. Western farmers also produce little of the crops most affected by the 1988 drought, soybeans and corn. Unlike producers in other regions, especially the Southeast and South Central, Western producers also will not benefit from the higher prices for soybeans and corn.

The Midwest is the only region likely to experience a decline in net cash income in 1988. Total gross income is expected to rise roughly 4 percent as possibly large losses in States hardest hit by the drought are offset by gains in those with more favorable weather or substantial irrigation.

Income Slips in All Regions in 1989

Next year is likely to be the second of lower net cash income for the Midwest, while larger reductions, relative to their 1988 incomes, are forecast for the Southeast and South Central regions. Estimated 1989 net cash income will be almost 7 to 9 percent lower than in 1988 in the Midwest. The decline could be even greater in both the South Central and the Southeast regions.

Figure 9
U.S. Regions

The Midwest accounts for 63 percent of direct Government payments. Total direct payments could fall 13 percent in 1988 and 26 percent in 1989. Gross cash income is projected to rise less than 2 percent as higher crop and livestock receipts balance lower payments. Gross cash income should also be maintained in the West with modest gains in crop and livestock receipts. However, higher cash expenses in both the Midwest and West will force 1989 net cash income down 10 to 12 percent.

Net cash income forecasts for 1989 are down from 1988 and even below 1987 levels in the Northeast, Southeast, and South Central regions. Reduced crop receipts in 1989 will combine with lower Government payments and higher cash expenses to bring net cash income about 9 percent below 1987 in the Northeast and the Southeast. Northeast net cash income was up only 1 percent in 1988 and could fall as much as 10 percent in 1989. Net cash income in the South Central region could be 15 to 18 percent below the 1987 level. Changes in cotton receipts affect South Central income because over half of the U.S. cotton is produced there. South Central cash receipts from cotton should fall sharply in 1989 after increasing more than 30 percent in 1988.

The portion of U.S. soybean and wheat production from the Southeast and South Central regions increased in 1988 when some States in the West and Midwest had their output reduced by drought. Food grain receipts, which almost doubled in the South Central region in 1988, are forecast to decline almost 14 percent in 1989. Georgia and Tennessee each increased their wheat receipts about 50 percent in 1988, but food grain receipts may decline more than one-fourth during 1989 in the Southeast.

FARM SECTOR BALANCE SHEET

The balance sheet provides a year-end "snapshot" of farm sector assets, debt, and equity. The 1989 farm financial picture continues to improve, with asset, debt, and equity values expected to rise 2 to 3 percent from 1988 levels. Record-tying commodity receipts of $148 to $152 billion and a stronger farm and U.S. economy underlie a solid 1989 farm financial outlook. Returns to operators -- although down to $36 billion in 1988 from 1987's record level of $42.5 billion -- should rebound to $42 to $46 billion in 1989. The 1988 drought has alleviated the problem of excess commodity stockpiles for most crops. Land markets and the farm sector balance sheet have stabilized in real terms ($1982). While debt has fallen, assets and equity have generally kept pace with inflation since 1986 (table 2).

These high returns to farm assets boosted real estate values 2.5 percent in 1987. While this year's drought and uncertainty about interest and inflation rates are moderating the rise in real estate asset values in many local markets, nation-

Table 2--Balance sheet of the farming sector 1/

Year	Current dollars			Deflated dollars ($1982) 2/		
	Assets	Liabilities	Equity	Assets	Liabilities	Equity
	Billion dollars					
1980-84	949.6	184.4	765.1	976.3	188.1	788.2
1985-86	720.3	165.3	555.1	641.3	147.2	494.1
1987	708.9	142.7	566.3	602.3	121.2	481.1
1988F	741	139	602	609	114	495
1989F	755 to 765	139 to 147	612 to 622	595 to 605	110 to 115	485 to 490

F = Forecast. 1/ Excludes operator households and CCC commodity loans. 2/ Deflated by the GNP implicit price deflator, 1982 = 100.

wide farmland values are expected to increase 6 percent in 1988 and another 2 to 4 percent in 1989. Farm debt (excluding operator households) dropped by $12.6 billion in 1987 (over 8 percent) to $142.7 billion -- $50 billion below its 1983 peak. Debt is expected to continue to decline more slowly in 1988 and then to rise slightly in 1989. The rate of debt reduction in 1988 will depend on the timing of drought relief payments and on farmers' responses to high net cash income. Farm equity rose by $30 billion in 1987 as asset values gained and farm debt fell. Farm equity is expected to rise to over $600 billion by the end of 1988, and could increase another $10 to $20 billion in 1989.

Farm Asset Growth Continues

The value of U.S. farm assets (excluding operator households) is forecast at $741 billion on December 31, 1988, up 4.5 percent from 1987, and at $755 to $765 billion on December 31, 1989, mostly due to rising farm real estate values. Farm real estate values increased by $30 billion in 1988, and accounted for most of the growth in farm asset values. The projected 2-to 4-percent growth in land values in 1989 varies considerably across the country. Stabilization of land values is essential for long-run farm financial progress.

Nonreal estate asset values in 1988 are expected to remain near 1987 levels, but are forecast to rise to $190 to $200 billion in 1989. Increased 1988 livestock inventory values are expected to offset lower crop inventory values, which may fall about 12 percent to $18 billion due to the drought-induced drawdown in stocks. The value of farm machinery and equipment is expected to stabilize in 1988 after falling by nearly $6.5 billion (down 8 percent) in 1987. Increased sales and higher prices of new machinery will likely offset the depreciation of the larger stock of machinery purchased in the early 1980's.

The anticipated 2- to 4-percent increase in nonreal estate asset values in 1989 is due mostly to higher inventory values of farm machinery, equipment, and crops stored on farms. Crop inventory values are forecast to rise to $18 to $22 billion in 1989, as farmers replenish depleted stocks. Livestock and poultry values may rise slightly in 1989, as will farm machinery and equipment values. Farm financial assets held by farmers are expected to rise by about $1 billion in 1988 and 1989.

Farm Debt to Increase

Farm debt will likely increase slightly in 1989, reversing a 5-year trend of annual debt reduction. During the year, total debt outstanding is anticipated to increase by about $2 to $5 billion. The retirement of farm business debt has continued through 1988, as a slight increase in nonreal estate debt was more than offset by declining real estate debt levels. The 1988 drought dramatically affected individual farmers' debt balances. Producers in less severe drought areas benefited from higher prices and near normal production levels. Apparently, these higher-than-anticipated cash incomes were applied to further debt retirement.

The Farm Credit System loans (principally Federal Land Banks and Production Credit Associations) should increase by about $1 to $3 billion in 1989, as the System continues to rebound from the financial difficulties of the mid-1980's. This will mark the first FCS annual increase since 1982; the $36 to $39 billion owed the Farm Credit System by the end of 1989 will be about 40 percent less than the 1982 peak.

Commercial banks surpassed the Farm Credit System as the principal provider of farm sector credit in 1987. Bank farm debt is expected to increase by about $1 to $3 billion in 1989; many rural banks report that funds available for farm loans may exceed local demand.

- By the end of 1989, banks should hold approximately one-third of all farm debt, and the Farm Credit System should hold about 25 percent. This represents a reversal of 1984 market shares of these two lenders.

Debt held by the Farmers Home Administration should decrease by at least $2 billion in 1989, as the agency begins to implement legislation (Farm Credit Act of 1987--PL 100-

233) to restructure delinquent loans. FmHA debt reduction could be substantially higher, depending on the speed with which existing problem loans are restructured or written off.

- As of September 30, 1988, over $8 billion was more than 1 year delinquent on FmHA farm loans; $6.6 billion of this was delinquent more than 4 years. Potentially, these amounts could be written off in the restructuring process.

Lending to finance farm real estate transactions should increase slightly in 1989, as improving land values stimulate renewed interest by nonoperator investors, and as financially sound farmers seek to expand their operations. While many sales will be for cash, lenders will increase market share by offering financing in a more favorable resale market for their remaining foreclosure properties.

- The secondary mortgage market for farm real estate loans will not be fully operational until mid-1989, but it should increase available farm real estate credit, as lenders write a portion of their loans to meet anticipated guidelines for sale to Farmer Mac.

Demand for nonreal estate loans should be high during 1989, as increases in planted acreages push up expenditures for most inputs, and farmers replace an aging machinery stock. Farmers who deferred major machinery purchases in 1988 due to reduced acreages and poor harvests may make those capital replacement purchases in 1989. Nonreal estate debt outstanding should increase by $2 to $3 billion in 1989.

Equity Growing

Farm equity is expected to rise by about 6 percent in 1988 to $602 billion. This would be the second year of increase following a 35-percent decline from 1980's peak. Farm equity is projected to be $612 to $622 billion at the end of 1989. Real farm equity ($1982) rose 3 percent in 1988 but may fall slightly in 1989. Farm equity growth has been due to increased asset values and decreased amounts of debt used to finance operating expenses and purchases of land, machinery, and equipment. This firming of the sector's equity base is essential for long-term financial recovery.

FINANCIAL RATIOS, RETURNS, AND CASH FLOW

U.S. farm sector liquidity, solvency, profitability, and financial efficiency ratios suggest that the financial position continues to improve, especially compared to the early 1980's (appendix table 8). Farm sector liquidity, solvency, and financial efficiency generally improved in 1988, but profitability fell somewhat from 1987. In 1989, farm sector liquidity is forecast to decrease, solvency to remain stable, and profitability to increase. Farm financial efficiency ratios give mixed results for 1989.

Farm Sector Returns

Adjustments in farm asset values, returns, and cash flow continue to support high rates of return to farm assets and equity and to improve farmers' ability to service debt out of current earnings. The rate of return on farm assets from current income rose to 5.6 percent in 1987, and the rate of return on equity rose to 4.4 percent. However, both are expected to fall somewhat in 1988 (4.4 and 2.9 percent, respectively) as farm asset and equity values rise faster than returns. The total real rate of return on farm assets, including returns from current income and real capital gains, is expected to be 5 percent in 1988, and 3 to 5 percent in 1989 (table 3).

Returns to operators, and residual income to farm assets and to equity are expected to fall from 1987 levels ($1982), but to rise in 1989 due to the continued strength of crop and livestock commodity sales and to increased crop yields (table 4).

Table 3--Rates of return on farm assets and equity 1/

Year	Returns to assets			Returns to equity		
	Income	Real capital gains	Total	Income	Real capital gains	Total
	Percent					
1981-83	1.8	-5.8	-3.9	-.3	-5.8	-6.0
1984-86	4.0	-11.8	-7.9	2.3	-14.3	-12.1
1987	5.	-.3	5.2	4.4	.8	5.2
1988F	4.4	.5	5.0	2.9	1.7	4.6
1989F	5 to 6	-1 to -2	3 to 5	4 to 5	-1 to 0	3 to 5

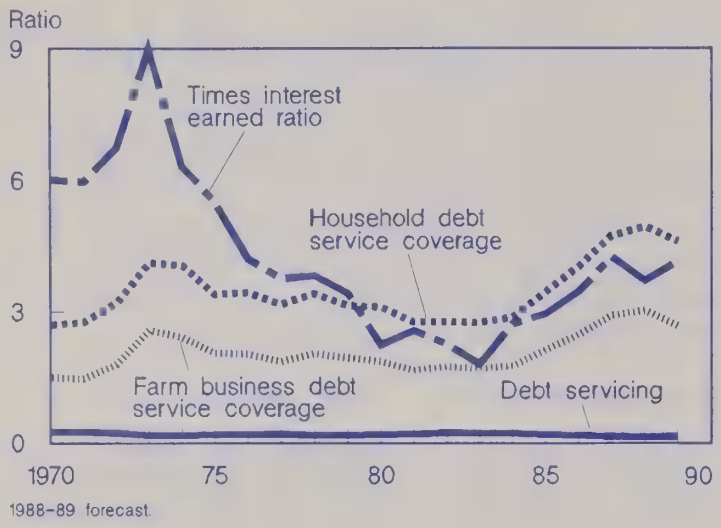
F = Forecast. 1/ Excludes operator households. Totals may not add due to rounding. Returns to assets and equity are calculated using the average of the current and previous year's assets and equity, respectively.

Table 4--Returns to assets and equity

Income and Returns	1981	1982	1983	1984	1985	1986	1987	1988F	1989F
	Billion 1982 dollars								
Gross farm income	164	151	135	151	140	132	137	133	137 to 141
Returns to operators	22	17	7	25	25	29	36	29	34 to 36
Residual income to farm assets	23	22	10	26	27	32	33	26	32 to 33
Residual income to equity	3	1	-9	8	11	18	21	14	20 to 21

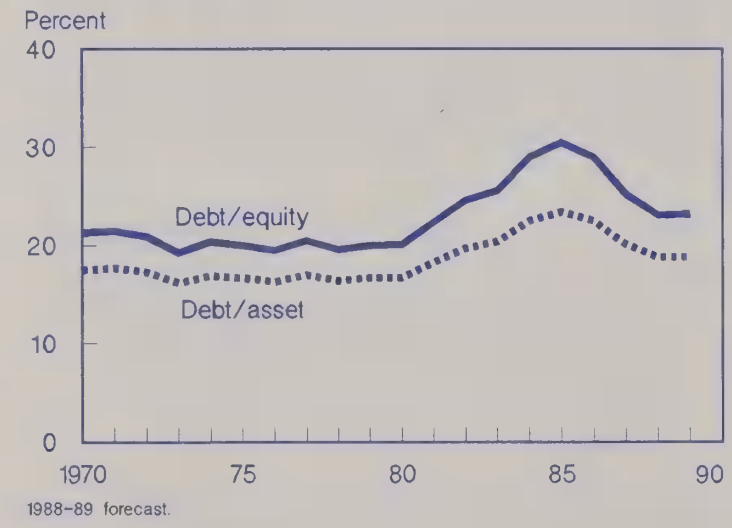
F = Forecast.

Figure 10
Liquidity Ratios



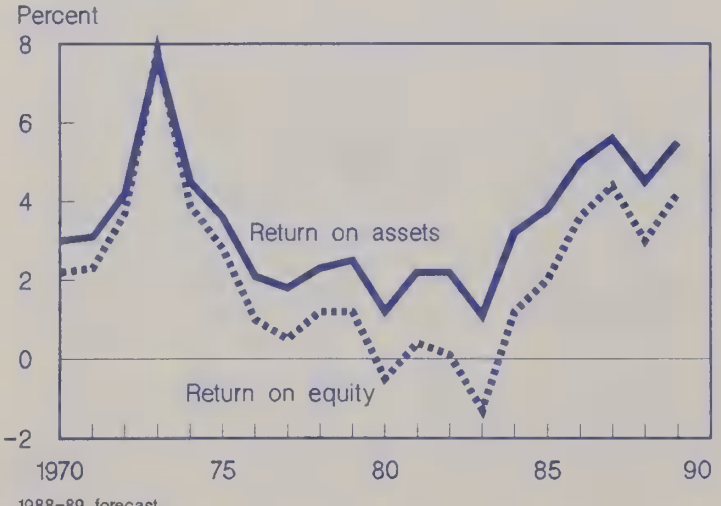
1988–89 forecast.

Figure 11
Solvency Ratios



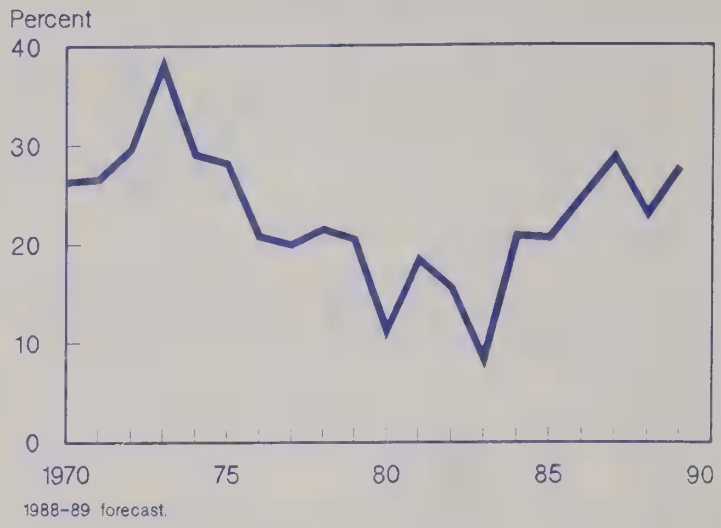
1988–89 forecast.

Figure 12
Profitability Ratios: Return on Assets and Equity



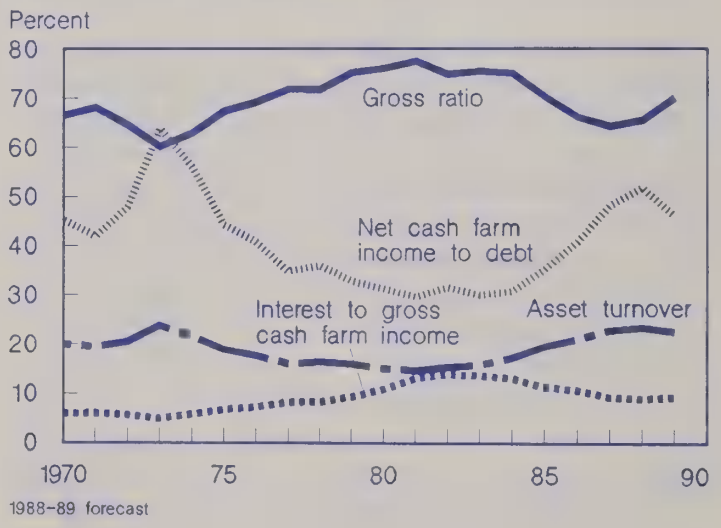
1988–89 forecast.

Figure 13
Profitability Ratios: Profit Margin



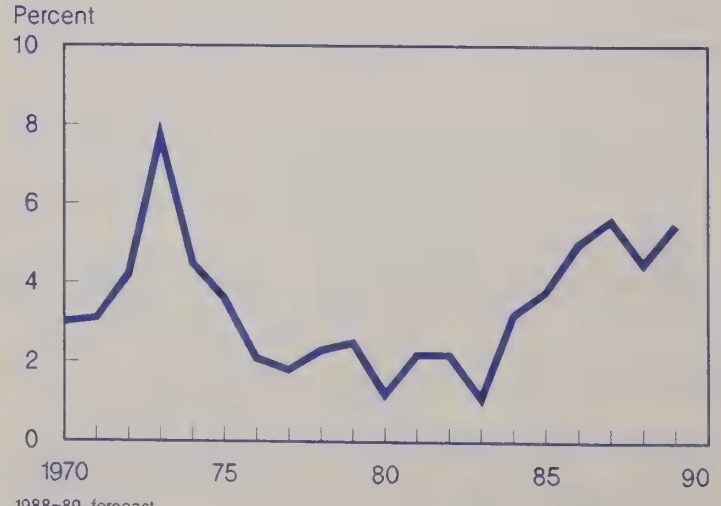
1988–89 forecast.

Figure 14
Financial Efficiency Ratios



1988–89 forecast

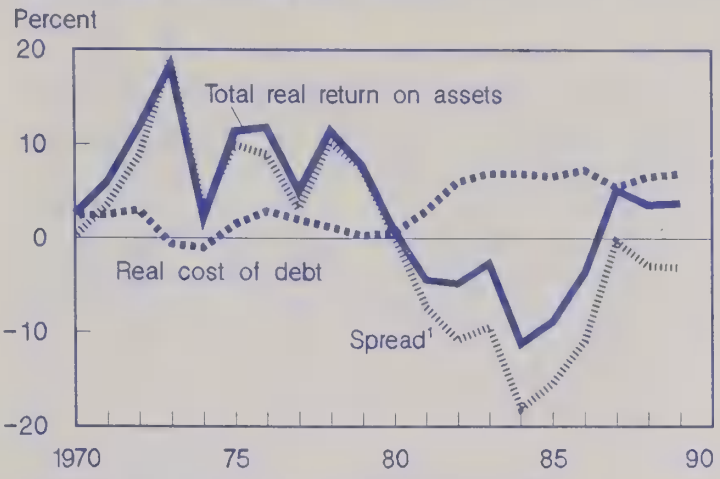
Figure 15
Rate of Return on Farm Assets



1988–89 forecast.

Figure 16

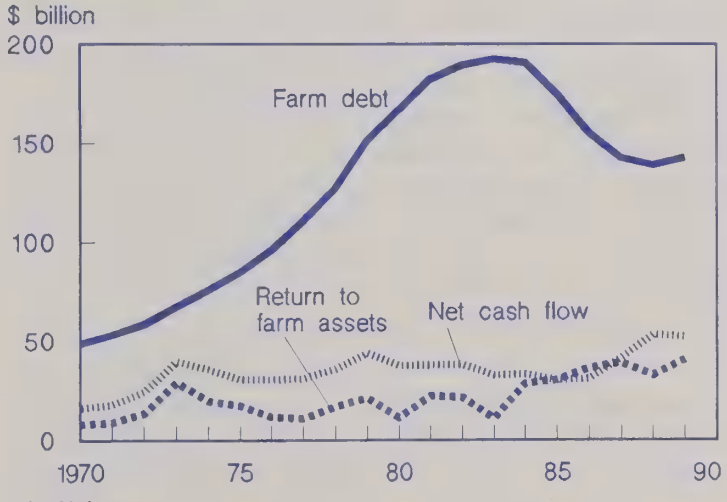
Rate of Return on Assets and Cost of Debt, Including Real Capital Gains



1/ Equals total real return on assets less the real cost of debt.
1988-89 forecast.

Figure 17

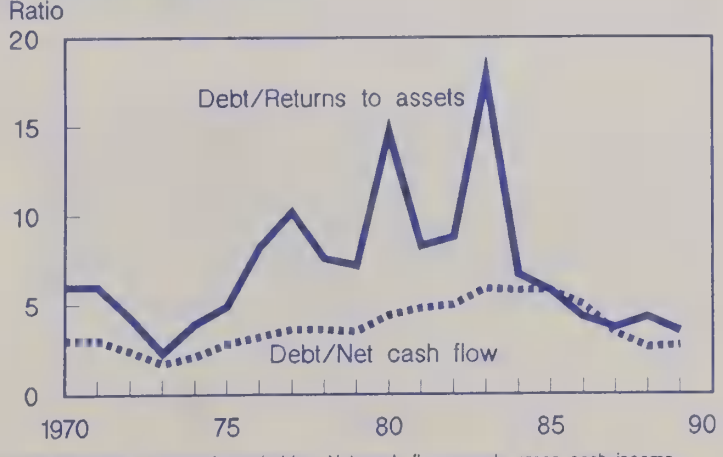
Farm Debt Compared with Income Flows to Farm Assets



1988-89 forecast.

Figure 18

Farm Debt Compared with Returns to Assets and Net Cash Flow



Debt excludes operator households. Net cash flow equals gross cash income minus total operating expenses.
1988-89 forecast.

The total-real-rates-of-return measures of profitability and the "spread" include the real capital gains component of total returns. The spread is the total real return on assets minus the real cost of debt. As the total real return on assets has been rising faster than the real cost of debt, the spread has been rising from negative values since 1984. It rose from -10.9 percent in 1986 to -0.3 percent in 1987. The spread is expected to be -1.6 percent in 1988 and -2.6 percent in 1989. This suggests that debt financing is becoming somewhat less profitable for the farm sector as a whole than in 1987. However, debt financing is still considerably more profitable than it was in the mid 1980's (figure 16).

Cash Flow

Cash flow after interest ($1982) in 1987 was $35 billion and is expected to be about $42.5 billion in 1988 and $40 to $43 billion in 1989, up from the 1984-86 average of $28 billion. Growth in real cash flow after interest since the mid-1980's reflects stable capital expenditures, lower interest expenses, and decreased net loan repayments.

Net cash flow in current dollars is expected to rise by $10 billion in 1988 and another $1 to $3 billion in 1989. Returns to farm assets are expected to fall by nearly $7 billion from a record high of $39 billion to $32 billion in 1988, and then rise $8 to $10 billion in 1989. The debt-to-net-cash-flow ratio is expected to decline from 3.4 in 1987 to around 2.7 in 1988 and 1989. The debt-to-returns-to-farm-assets ratio is expected to rise from 3.7 in 1987 to 4.3 in 1988 but fall back to the 1987 level or below in 1989.

Overall, farmers are in a stronger financial position in 1988 than at any other time in the last several years due to effective cost control, tightened capital budgets, increased cash financing, and continued restructuring and write-offs of outstanding debt.

GENERAL ECONOMY

The Council of Economic Advisors released its macroeconomic forecast for 1989, which will be used in drawing up the 1990 budget. According to the Council, real GNP will grow 3.5 percent from the fourth quarter of 1988 to the fourth quarter of 1989, consumer prices will rise 3.7 percent over the same period, and the 3-month Treasury bill rate will average 6.6 percent during 1989. The drought's effects on quarterly GNP figures also have an effect on the interpretation of the real GNP growth forecast. This is because the fourth quarter of 1988 is an "artificially low" starting point. Excluding the drought effect, the real GNP is expected to be 2.8 percent higher in the fourth quarter of 1989 than the fourth quarter of this year.

Table 5--Flow of funds to the farm sector, 1981-1989F

Income and Returns	1981	1982	1983	1984	1985	1986	1987	1988F	1989F
	Billion 1982 dollars								
Gross cash income	155	151	145	144	141	133	136	139	130 to 134
Plus: Change in loans outstanding	16	7	3	-2	-14	-17	-11	-3	2 to 4
Plus: Net rent to nonoperator landlords	7	6	5	*	7	6	6	6	5 to 7
Plus: Net change in farmers' currency and demand deposits	*	*	*	*	1	1	*	*	0 to 1
Minus: Gross cash expenses (excluding interest)	100	92	89	89	83	74	75	79	78 to 82
Minus: Capital expenditures	18	13	12	12	9	7	8	*	7 to 9
Equals: Cash flow before interest payments	61	59	51	50	43	41	48	55	53 to 55
Minus: Interest payments	20	21	20	19	16	14	13	12	11 to 13
Equals: Cash flow after interest payments	40	38	31	31	27	27	35	43	40 to 43

F = Forecast. * = less than + $.5 billion. Numbers may not add due to rounding.

Real GNP growth in 1989 will continue to be led by exports, although exports will not grow as quickly in 1989 as in 1988. Business spending on plant and equipment will continue to be brisk and will tend to be faster in manufacturing than in nonmanufacturing. Higher levels of capacity use tend to be associated with higher levels of plant and equipment spending. Inflation will be moderate, in the 3.5- to 4.5-percent range. The actual rate could depend largely on the price of energy goods, most notably crude oil, and on how fast the economy grows. Real growth around 3.5 percent is more likely to be associated with 4.5-percent inflation, while growth near 2.5 percent is likely to be associated with the lower inflation figure, assuming similar crude oil prices.

In this environment, monetary policy is likely to be "steady as she goes," although strong anti-inflation statements are likely to come from the Fed at regular intervals. Thus, sustained interest rate movements in either direction are unlikely.

GNP and the Drought

The Bureau of Economic Analysis (BEA) is projecting that real GNP growth (annual rate) in the fourth quarter of 1988 will be reduced by 1.3 percentage points from what it otherwise would have been due to crop and livestock losses from the drought. Conversely, seasonally-adjusted growth in the first quarter of 1989 will be 2.8 percentage points higher than would otherwise be the case, since farm production is assumed to return to more normal levels, and will be coming off the drought-reduced, fourth-quarter levels. This will make interpreting the GNP statistics difficult for the next two quarters.

There are some major points to keep in mind. BEA annualizes its quarterly figures to facilitate comparison with annual figures. In essence, BEA reports what happened in a quarter as if it had happened for the entire year. Generally, the procedure is innocuous. However, events which are peculiar to a particular quarter then get "too much weight", compared with what happens over the course of a year.

The drought is a perfect example of this problem. BEA has estimated that $12.8-billion ($1982) worth of production was lost due to the drought for all of 1988, which comes to about .3 percent of real GNP. Of that $12.8 billion, $6.8 billion will be taken out of fourth-quarter farm production by BEA, since they are assigning losses mostly to harvest periods. When BEA annualizes the fourth-quarter figures, it will appear that farm production is about $25 billion lower because of the drought (roughly $6.8 billion multiplied by 4 quarters). Thus, the drought will have a disproportionate effect on fourth-quarter real GNP growth.

The effect will be undone, however, in the first quarter of 1989, providing we get normal first-quarter farm production. This "snapping back" to normal production will make the first-quarter real GNP growth artificially high. To keep all this straight, the numbers to keep in mind are the $12.8 billion ($1982) in losses for 1988, and the .3 percent of real GNP.

DEVELOPING AND USING COST-OF-PRODUCTION DATA

by
Robert G. McElroy [1/]

In the 1973 farm legislation, Congress mandated that USDA provide annually updated production cost estimates for the major program commodities. ERS is responsible for developing these estimates. Congress originally required that cost estimates be developed only for wheat, feed grains, cotton, and dairy. Over time, new commodities have been added to broaden the perspective about competition for farm production resources. Cost-of-production (COP) estimates are currently done for wheat, feed grains, cotton, milk, rice, peanuts, soybeans, flax, sunflower, sugar, fed cattle, cow-calf, hogs, and sheep. The Senate Committee on Agriculture, Nutrition, and Forestry published the first COP estimates in 1974 and continued annually until 1983. Now ERS publishes them.

In 1981, ERS convened a task force to review the concepts and methodology underlying enterprise cost estimates. Particular concern had been raised about using cost estimates for justifying and setting commodity support rates. There was also concern over the credibility of these estimates as a useful indicator of agricultural conditions. For example, in some instances estimated costs were considerably above observed prices of the commodities. Further, the behavior of producers did not coincide with what would be expected given these cost-price disparities.

If costs were overestimated and if cost levels had an influence on price and income support levels, then farm interests and policymakers could be misled by the cost and return comparisons they were making and end up with unnecessarily high price and income supports. Further, the relationship between cost and price could result in a self-sustaining cost-support price spiral. The long-run result would be an incentive for farmers to overproduce, for consumers to pay higher prices for food and fiber than necessary, and for taxpayers to be burdened with excessive program outlays.

The problem areas associated with the COP estimates included:

- the use of nominal interest rates as a rate of return for opportunity cost calculations;
- the calculation of an opportunity cost for management as a proportion of the level of other costs; and,
- ignoring the theoretical relationship between costs and returns for crop commodities.

The task force recommended that the estimates be presented in a budget format consisting of three parts: cash receipts; cash variable and fixed expenses; and economic or opportunity costs. The difference between total cash receipts and total economic costs leaves a bottomline residual return to management and risk. In December 1983, ERS introduced the new format for presenting the budgets and adding imputed costs for noncash expenses (e.g., unpaid labor). With this more complete accounting, various costs and net returns can be measured to compare the economic position of commodities. The budgets are part of the Economic Indicators of the Farm Sector series published late each summer by ERS.

Obtaining Data for Estimating Production Costs

The primary data source for developing COP budgets is the Farm Costs and Returns Survey (FCRS) conducted nationally each winter by ERS and the National Agricultural Statistics Service (NASS).

About half of the approximately 26,000 respondents are asked to complete a detailed whole-farm expenditure and receipt questionnaire. Other respondents are asked for less detailed whole-farm data but for more detailed information on inputs used, application rates, and other production practice data such as the type and number of field operations performed, machines used, and times over the field for one of several specific commodities. These data form the basis for the enterprise budgets. For example, corn, barley, cotton, peanuts, flue-cured tobacco, and cattle on feed were surveyed last February and March for 1987 COP data.

The survey data are sorted by State to give average quantities of inputs used to grow the crop or produce the animal. Table 6 shows selected inputs for growing corn in Illinois, representing some 10.44 million acres. Combining the quantities from the FCRS with the prices from other NASS surveys gives the estimated costs of each input.

The FCRS provides additional data on machinery field operations (table 7). Adding prices of the tractors and implements and using a computerized engineering approach, estimates can be made for costs of fuel, repairs, machinery labor, and machinery ownership. Final COP budgets are aggregated by region, using each State's acreages as weights, to give a final national budget (table 8).

Because of a limited sample size and high enumeration costs, USDA does not survey for every commodity every year, but rather on a 4-year rotation. Between survey years,

1/ Senior income analyst and former leader, ERS Cost-of-Production Project

costs are updated using new yields, prices, and price indexes provided by NASS.

Cash Expenses and Economic Costs

Cash expenses are the out-of-pocket costs incurred during the production process. The COP survey data provide the average quantities of many of the variable inputs, such as seed and fertilizer, which are multiplied by prices to estimate cash expenses (table 6). For a few items, such as chemicals and irrigation water, the survey data provide an average cost per acre, rather than a quantity. The different categories of fixed costs are estimated by averaging the expenditures reported in the FCRS.

Economic costs, on the other hand, include both cash and noncash expenses, plus returns to the farmer for land, labor, capital, and management. USDA uses a residual return approach to estimate the costs of owned resources. Individual

Table 6--Selected production inputs for Illinois corn, 1986

Item	Unit	Quantity	Price/Unit	Cost/Acre
Seed	Lbs.	14.70	$1.190	$17.49
Nitrogen	"	161.30	.184	29.68
Phosphate	"	81.40	.210	17.09
Potash	"	115.60	.105	12.14
Chemicals	Acre	1.00	18.488	18.49
Drying	Bu.	65.90	.116	7.62
etc.				

Quantities on a planted-acre basis.

Table 7--Selected machinery requirements for Illinois corn, 1986

Item	Times Over	Width (Ft.)	Tractor
Moldboard plow	.23	8.5	135 hp
Chisel plow	.43	13.1	155 hp
Tandem disk	.94	21.1	135 hp
Field cultiv.	1.08	24.7	155 hp
Planter 8-row	.87	28.2	105 hp
Combine	.86	n/a	n/a
etc.			

Times over on a planted-acre basis.

Table 8--U.S. corn production costs, 1984-86 1/, 2/

Item	1984	1985	1986
	$ per planted acre		
Cash receipts (excl. direct Gov't payments):			
Primary crop	273.23	252.63	165.17
Total	273.23	252.63	165.17
Cash expenses:			
Seed	18.03	18.48	16.82
Fertilizer	50.93	50.99	45.51
Lime and gypsum	1.63	1.66	1.65
Chemicals	19.51	19.51	19.21
Custom operations	6.89	7.00	6.70
Fuel, lube, and electricity	14.10	13.15	9.52
Repairs	11.12	11.22	11.17
Hired labor	1.62	1.68	1.68
Purchased irrigation water	.36	.35	.34
Drying	5.35	5.64	5.10
Miscellaneous	.23	.23	.22
Technical services	.81	.80	.81
Total, variable expenses	130.58	130.72	118.74
General farm overhead	15.37	15.34	14.53
Taxes and insurance	17.00	17.36	17.66
Interest	45.91	43.94	38.65
Total, fixed expenses	78.28	76.64	70.83
Total, cash expenses	208.86	207.36	189.57
Receipts less cash expenses	64.37	45.27	-24.40
Capital replacement	33.73	33.92	33.71
Receipts less cash expenses and replacement	30.64	11.35	-58.11
Economic (full ownership) costs:			
Variable expenses	130.58	130.72	118.74
General farm overhead	15.37	15.34	14.53
Taxes and insurance	17.00	17.36	17.66
Capital replacement	33.73	33.92	33.71
Allocated returns to owned inputs:			
Return to operating capital 3/	5.42	4.28	2.87
Return to other nonland capital 4/	6.78	6.47	6.50
Net land rent 5/	67.63	55.22	32.19
Unpaid labor	13.10	13.59	13.63
Total, economic costs	289.61	276.90	239.82
Residual returns to management and risk 6/	-16.38	-24.27	-74.65
Harvest-period price ($/bu.)	2.58	2.15	1.40
Yield (bu./planted acre)	105.79	117.29	117.69

1/ To estimate the per-unit expense or cost of production from these items, refer to text section "Using Cost-of-Production Data." 2/ Sum of operator and landlord expenses. 3/ Variable expense items multiplied by part of year used and the 6-month U.S. Treasury bill rate (see pg.). 4/ Value of machinery and equipment multiplied by long-run real rate of return to production assets in farm sector (see pg.). 5/ Of total acres rented, percentage of cash- and share-rented acres multiplied by the average cash and share rent. 6/ Calculated by subtracting total economic (full ownership) costs from total cash receipts.

Reprinted from Economic Indicators of the Farm Sector: Costs of Production, 1986.

operators may choose to use other methods of allocating returns (receipts less cash expenses and replacement costs) to cover the costs of these owned resources. Some operators may assign a proportionately larger return to cover land ownership costs and then leave a small return to unpaid family labor. Others may do the opposite.

From an aggregate perspective, other complicating factors, such as equity levels and tenure, must be taken into account. USDA only assumes that these allocated residual returns reflect full ownership costs for all resources.

Differences in individual operating conditions make it impossible to compare, for example, a particular corn grower in the Northern Plains with a peanut grower in the Southeast, or even another corn grower in the Southeast. To make comparisons, therefore, ERS imputes, or assigns, rates of return to the owned factors across regions and crops. The total economic costs or returns to management for corn then can be compared with those for peanuts.

Cash Rent and Share Rent Arrangements

Since the COP budgets are presented as a sector rather than an operator budget, they include both landowner and rental expenses. The two budgets are different. For example, operator budgets include rent and lease costs, reflect the cash expenses for which the renter is responsible (minus the landlord's share), and portray the characteristics of an individual farming operation. USDA budgets are based on an average of operator costs and practices and are designed to reflect the costs of production per acre regardless of who owns or supplies inputs.

Also, cash and share rent are examples of different tenure characteristics (and production costs from a lessee's point of view). ERS budgets estimate a return to land based on a weighted average of the cash and share rental rates and tenure characteristics unique to each State in the region.

Harvest-Period Prices

Harvest-period prices, rather than season-average prices, are used in the COP budgets because storage costs are not included as a cost of production. Storage is better classified as a marketing cost. For example, if the majority of Illinois corn is harvested in October, that price is used to estimate receipts. This is done for each crop in each State before the budgets are weighted and aggregated to regional and U.S. averages.

Data users should also be aware that estimates of receipts omit direct Government payments. However, in the peanut, milk, sugar, and wool programs, the Government supports the product price through direct market intervention. As a result, the value of production reflects the combined market price and masks Government payments. In contrast, other crop price support programs are voluntary and contain special provisions for compliance. Both program payments and the costs of compliance need to be excluded if cost and return information is to be used to determine whether support prices will encourage or maintain production at adequate levels.

Cost-of-Production Terminology

Cash receipts or gross value of production--Primary crop receipts equal the harvest-period price times the planted-acre yield. For some crops there is a secondary product (e.g., wheat straw, cottonseed, beet tops, culled livestock, etc.), and these receipts are included as well. Government payments are not included in receipts since program participation is voluntary. There are also costs associated with participation for which little data are available. Peanuts, sugar, wool, and dairy are exceptions since the program payments directly influence the market price.

Cash expenses--These reflect the short-run out-of-pocket variable and fixed costs. On a per-unit basis they are the minimum breakeven price needed, on an average acre of cropland, to raise and harvest a crop with the given yield.

Most expense items are self-explanatory. Technical services include soil tests and scouting. General farm overhead includes items such as telephone, office supplies, fence repairs, and general business expenses. Taxes include personal property and real estate taxes. Federal and State income taxes are not included in the budgets because they are determined by the financial situation of each taxpayer. Insurance includes liability and fire, but not crop. Interest expenses come directly from the FCRS and measure the actual cash payments of the respondent.

Capital replacement (or economic depreciation)--This represents an estimate of the value of the machinery, equipment, and breeding stock used up during the year, plus the additional cost required to bring these items up to the same quality and quantity levels that they were at the beginning of the period. The cash flow position of producers can be determined by subtracting cash expenses, with or without capital replacement, since the producer can delay replacing capital for a short time.

Economic (full ownership) costs--These provide a full accounting of both cash and noncash costs for an average acre to produce the given yield, regardless of tenure or equity. Economic costs excluding land indicate the average longer run costs which must be covered in some manner to keep an acre of land in production before payment of land rent, whether to the owner-operator or to the landholder. Economic costs including land indicate the total long-run costs. On a per-unit basis they show the long-run average price necessary to break even and continue producing the commodity.

All cash expenses, including replacement but excluding cash interest, are included in economic costs. Interest is excluded because it implies a certain equity position of the operator. Rather, a measure of returns is needed that can be used for all commodities regardless of equity position.

Subtracting the sum of the cash expenses (less interest) and capital replacement from total receipts gives the residual return to owned inputs. The residual returns can then be allocated to cover the costs of capital invested in operating inputs, in machinery and equipment, and in land (rent) and labor. The cost allocation is based only on the imputed value of each item in the production process and is fully explained in ERS' annual COP report.

Total economic costs are subtracted from total receipts to give a residual return to management and risk. This return does not reflect and should not be interpreted as profit or loss, since it excludes Government program payments, income taxes, and other factors such as marketing expenses.

Net cash returns--These are estimated by subtracting total cash expenses from total cash receipts. They are the minimum returns from a crop. They are slightly overstated in all the crop budgets except sugar because of the absence of hired labor costs in variable expenses.

Net cash returns after replacement--These reflect cash available for paying for the farmer's owned inputs after all cash costs are paid.

Residual returns to management and risk--These are the long-run economic indicators used to make comparisons between commodities and to assess relative returns among commodities.

Are These the FEDS Budgets from Oklahoma?

Yes and no. ERS established the COP project in 1974 at Oklahoma State University as the Firm Enterprise Data System (FEDS). In 1986, the project was relocated to ERS headquarters in Washington, D.C. A new method for estimating the costs at the farm level, directly from the FCRS data, is currently being tested. This new method gives more precise estimates and permits analysis of the underlying structure of the farm business. The article by Glaze and Ali in this report highlights this new method.

DISTRIBUTION OF COSTS OF PRODUCTION FOR WHEAT FARMS

by
Dargan Glaze and Mir Ali [1/]

Abstract: Farmers, researchers, and policymakers frequently ask questions about the relationships between costs associated with producing a commodity and other factors such as farm size. ERS is using a new approach called the Farm-Level Budget Generator (FLBG) to estimate costs of producing major commodities and to provide more information about production costs and cost relationships than previously was possible.

Keywords: wheat, costs of production, cost distributions, size, FLBG

How production costs are distributed is a classical question in agricultural economics. Data availability has always limited distributional analyses and most previous studies have used either synthetic data or benchmark farms. The larger questions concerning how much of a specific commodity is produced at a given cost level or the number of farms producing the commodity at that cost level have not been adequately answered. Now, ERS can answer these questions as well as other questions of this nature with its new Farm-Level Budget Generator (FLBG) and data from the Farm Costs and Returns Survey (FCRS).

Since 1974, ERS has been estimating costs of production (COP) with a computer model called the Firm Enterprise Data System (FEDS), which uses State-level averages calculated from the FCRS data. The use of these State-level averages introduces bias into the estimation of production costs as a result of the aggregation procedure. Therefore, much of the variability in the farm-level data from the FCRS is not retained. The FLBG directly accesses the FCRS data, one observation at a time, to estimate a commodity budget for each individual producer, so State-level averages are not required (1,2).

Results obtained from the FLBG and FEDS approaches to estimate the cost per planted wheat acre for 1986 for the United States are shown in table 9. While the results of the FLBG compare closely with those of the FEDS, there are some differences between the estimated costs for the two approaches as a result of methodological differences previously mentioned.

Since the FLBG estimates production costs for each observation, there is a one-to-one correspondence between these production costs and the descriptive FCRS farm-level data for that observation which allows more rigorous analysis of such areas as economics of size and cost distributions.

Size and Cost Distribution

The 1986 wheat survey represented approximately 280,846 wheat farms that produced 1.7 billion bushels on 53.4 million acres. Farms with 500 or more wheat acres

Table 9--Comparison of 1986 U.S. wheat costs of production: FLBG and FEDS 1/

	FLBG	FEDS
	Dollars per planted acre	
Gross value of production (excluding direct Gov't payments):		
Primary crop	75.21	66.23
Secondary crop	5.99	2.18
Total	81.20	68.41
Cash expenses:		
Seed	5.72	7.29
Fertilizer	12.17	13.29
Lime and gypsum	.00 2/	.95
Chemicals	3.67	4.30
Custom operations	4.03	3.87
Fuel, lube, and electricity	4.20	6.87 3/
Repairs	7.49	6.42 3/
Hired labor	4.60	2.52
Purchased irrigation water	.16	.24
Technical services	.15	.19
Irrigation	.60	-- 4/
Total, variable cash expenses	42.79	45.94
General farm overhead	4.53	4.81
Taxes and insurance	7.62	7.68
Interest on operating loans	3.69	3.87
Interest on real estate	5.46	5.37
Irrigation 4/	.39	--
Total, fixed cash expenses	21.69	21.73
Total, cash expenses	64.48	67.67
Value of production less cash expenses (excluding direct Gov't payments)	16.72	.74
Capital replacement	11.05	19.64
Value of production less cash expense and capital replacement (excluding direct Gov't payments)	5.67	-18.90
Economic (full ownership) costs:		
Variable cash expenses	42.79	45.94
General farm overhead	4.53	4.81
Taxes and insurance	7.62	7.68
Capital replacement	11.05	19.64
Allocated returns to owned inputs:		
Return to operating capital	.77	1.37
Return to other nonland capital	6.13	3.73
Net land return	31.93	23.94
Unpaid labor	8.24	5.61
Total, economic costs	113.06	112.72
Residual returns to management and risk (excluding direct Gov't payments)	-31.86	-44.31
Harvest-period price (dollars/bu.)	2.30	2.30
Yield (bu./planted acre)	32.70 5/	28.74

1/ FLBG results are preliminary. 2/ Represents a value less than one cent. 3/ Includes irrigation expenses. 4/ Irrigation expense is a separate line item only for FLBG. 5/ Based on average yields per planted acre reflected in the FCRS data.

1/ Agricultural economists, Agriculture and Rural Economy Division, ERS

Table 10--Percent of wheat farms, wheat production, and wheat acres by size for the United States, 1986

Size (acres)	Farms	Production	Wheat acres	Wheat acres planted to total crop acres planted
		Percent		
< 25	25.36	1.81	1.75	9.04
25-74	25.49	6.47	6.03	17.40
75-149	17.19	9.63	9.38	23.53
150-299	11.15	11.88	12.09	34.28
300-499	10.91	21.51	21.58	53.06
500-999	7.13	26.82	27.15	61.13
1,000-1,499	1.71	11.03	10.37	52.15
> 1,500	1.02	10.85	11.65	75.69

Table 11--Levels of selected per acre U.S. wheat production costs by size, 1986 1/

Size (acres)	Total variable expenses	Total fixed expenses	Total cash expenses	Capital replacement	Total economic costs
			Dollars per planted acre		
< 25	54.91	28.68	83.59	11.79	166.20
25-74	49.74	26.77	76.51	9.78	132.55
75-149	49.37	21.01	70.38	10.61	125.79
150-299	46.12	20.87	66.99	11.75	121.28
300-499	42.08	21.87	63.95	11.27	112.74
500-999	39.43	21.20	60.63	10.71	104.69
1,000-1,499	46.65	20.53	67.18	11.56	117.45
> 1500	34.24	19.99	54.23	11.16	92.21

1/ FLBG results are preliminary.

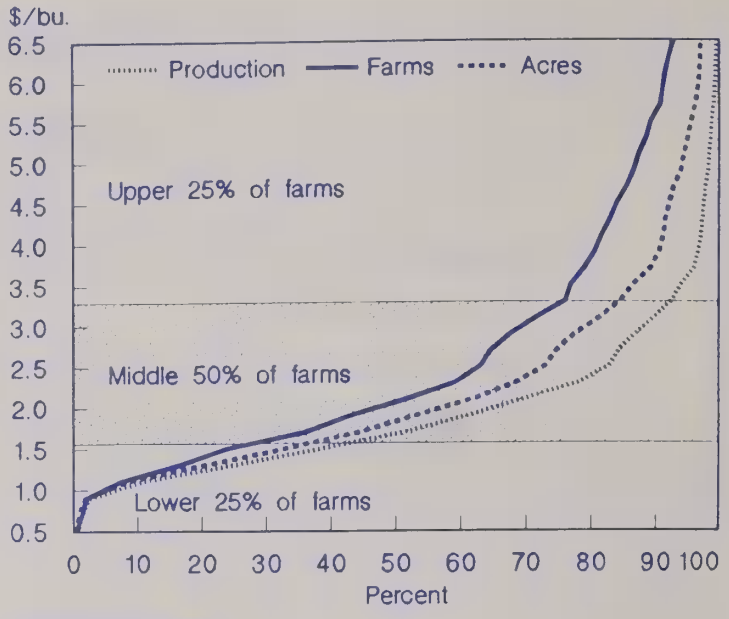
only represented about 10 percent of the number of wheat farms, but they produced more than 48 percent of the wheat grown in the United States (table 10). Conversely, farms with less than 75 acres of wheat represented more than 50 percent of the farms, but only produced about 8 percent of the crop. In addition, as a percentage of wheat acres to total crop acres, farms with more than 1,500 wheat acres devoted more of their cropland to wheat (75.69 percent) than farms with less than 25 acres of wheat (9.04 percent).

Per-acre total cash expenses and total economic costs from the FLBG decrease as wheat acres increase in all but one size group (table 11). In the 1,000- to 1,499-acre group, production costs are more than the preceding size group (500 to 999 acres) as a result of higher expenditures on seeds, fertilizer, and irrigation. When total cash expenses and total economic costs are expressed on a per-bushel basis, the relative difference between the costs for the 1,000- to 1,499-acre size group and the 500- to 999-acre group is less extreme and the trend of decreasing costs is more discernable (table 12).

The FLBG estimates represent a distribution or spread of all production costs. The planted-acre costs are converted to per-bushel costs which are weighted and arranged or ranked from the lowest to the highest level. Three groups are determined from the distributions of total cash expenses and total economic costs for the lower 25 percent (low cost), middle 50 percent, and upper 25 percent (high cost) of the farms (figures 19 and 20, respectively).

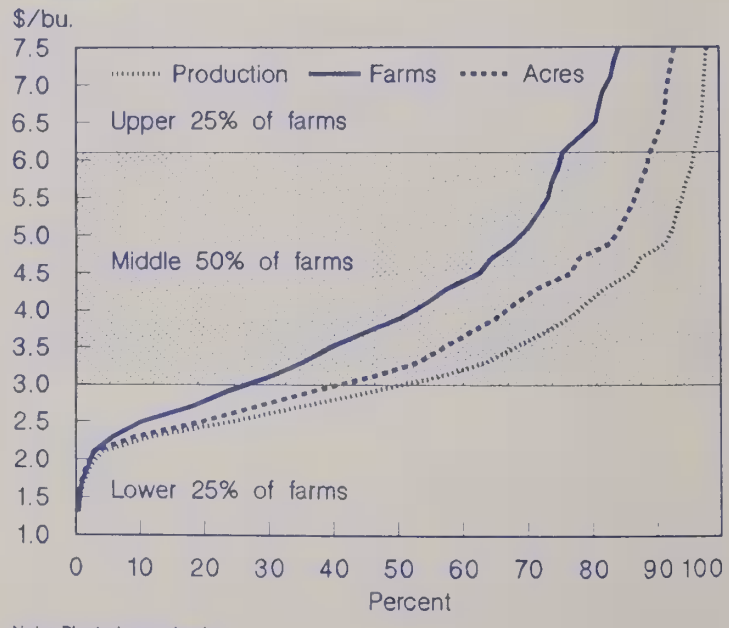
Fifty percent of the U.S. wheat farms had a total cash expense of less than $2.00 per bushel (figure 19). These farms

Figure 19
Cumulative Distribution of Wheat Farms, Production, and Acres by Total Cash Expenses



Note: Planted-acre basis.

Figure 20
Cumulative Distribution of Wheat Farms, Production, and Acres by Total Economic Costs



Note: Planted-acre basis.

produced about 66 percent of the wheat on about 58 percent of the acreage devoted to wheat. In addition, 50 percent of the wheat farms had a total economic cost per bushel of less than $3.84 (figure 20). These farms produced about 75 percent of the wheat on approximately 64 percent of the acreage devoted to wheat.

Farms in the lower quartile of the cumulative cost distribution had total cash expenses of less than $1.56 per bushel and produced approximately 39 percent of the crop

Table 12--Levels of selected per bushel U.S. wheat production costs by size, 1986 1/

Size (acres)	Total variable expenses	Total fixed expenses	Total cash expenses	Capital replacement	Total economic costs
	Dollars per bushel				
< 25	1.62	.85	2.47	.35	4.91
25-74	1.42	.76	2.18	.28	3.78
75-149	1.47	.63	2.10	.32	3.75
150-299	1.44	.65	2.09	.37	3.78
300-499	1.29	.67	1.96	.35	3.46
500-999	1.22	.66	1.88	.33	3.24
1,000-1,499	1.34	.59	1.93	.33	3.38
> 1500	1.13	.66	1.79	.37	3.03

Note: Yields are per planted acre. 1/ FLBG results are preliminary.

Table 13--Percent of U.S. wheat farms, wheat production, and wheat acres: cash expenses by quartile

Quartile	Farms	Production	Acres
	Percent		
Lower	25.0	38.89	33.08
Mid-range	50.0	53.00	50.43
Upper	25.0	8.11	16.49

Note: Planted-acre basis.

Table 14--Percent of U.S. wheat farms, wheat production, and wheat acres: economic costs by quartile

Quartile	Farms	Production	Acres
	Percent		
Lower	25	49.74	39.48
Mid-range	50	54.00	50.78
Upper	25	4.26	11.30

Note: Planted-acre basis.

on 33 percent of the wheat acres (table 13). Upper-quartile farms had total cash expenses of more than $3.29 per bushel and only accounted for about 8 percent of the wheat and 16 percent of the acres.

Lower-quartile farms had total economic costs of less than $2.99 per bushel and produced about 50 percent of the wheat on 39 percent of the acres (table 14). Farms in the upper quartile had total cash expenses of more than $6.11 per bushel, but only accounted for about 4 percent of the crop and 11 percent of the acres.

With itemized budgets for each group, one can examine economic efficiency (table 15). For example, in producing each bushel of wheat, the lower-quartile group is more efficient with respect to repairs (19 cents) than the mid-range and upper-quartile groups (22 and 47 cents, respectively). At the same time, to achieve its low-cost ranking, the lower-quartile group must allocate 24 percent of its total variable expenses to repairs while the upper-quartile group only allocates 15 percent. This latter measure demonstrates how different input mixes affect efficiency. The budget costs represent the means for each group. Yields are averages based on producer survey responses, while crop prices are harvest-period averages reported by the National Agricultural Statistical Service (NASS).

Table 15--U.S. wheat costs of production by quartile, 1986 1/

	Lower quartile	Mid-range	Upper quartile
	Dollars per bushel		
Gross value of production (excluding direct Gov't payments):			
Primary crop	2.30	2.30	2.30
Secondary crop	.16	.18	.27
Total	2.46	2.48	2.57
Cash expenses:			
Seed	.13	.17	.41
Fertilizer	.20	.41	.95
Lime and gypsum	.00	.00	.00
Chemicals	.04	.15	.21
Custom operations	.04	.14	.44
Fuel, lube, and electricity	.11	.12	.28
Repairs	.19	.22	.47
Hired labor	.08	.17	.27
Purchased irrigation water	.00	.01	.01
Technical services	.00	.01	.00
Irrigation	.00	.03	.03
Total, variable cash expenses	.79	1.43	3.07
General farm overhead	.11	.14	.24
Taxes and insurance	.18	.23	.51
Interest on operating loans	.05	.13	.27
Interest on real estate	.10	.19	.33
Irrigation	.00	.02	.01
Total, fixed cash expenses	.44	.71	1.36
Total, cash expenses	1.23	2.14	4.43
Value of production less cash expenses (excluding direct Gov't payments)	1.22	.34	- 1.84
Capital replacement	.29	.34	.48
Value of production less cash expense and capital replacement (excluding direct Gov't payments)	.94	2.48	- 2.32
Economic (full ownership) costs:			
Variable cash expenses	.80	1.43	3.07
General farm overhead	.11	.14	.24
Taxes and insurance	.18	.23	.51
Capital replacement	.29	.34	.59
Allocated returns to owned inputs			
Return to operating capital	.01	.03	.06
Return to other nonland capital	.14	.19	.39
Net land return	.91	.96	1.45
Unpaid labor	.21	.26	.45
Total, economic costs	2.65	3.58	6.76
Residual returns to management and risk (excluding direct Gov't payments)	- .19	- 1.10	- 4.19
Harvest-period price (dollars/bu.)	2.30	2.30	2.30
Yield (bu./planted acre) 2/	38.40	34.30	16.10

1/ FLBG results are preliminary. 2/ Based on average yields per planted acre reflected in the FCRS data.

There are substantial differences in yields among the three groups ranging from 38.4 bushels for the low-cost farms to 16.1 bushels for high-cost farms (table 7). These lower yields for the high-cost farms exist despite greater expenditures on seeds, fertilizer, chemicals, and irrigation. As a result of greater input use, high-cost farms spend more on custom operations, hired labor, and interest expenses. Also, high-cost farms use more machinery and equipment to apply their inputs, which is reflected by higher expenditures on fuel, lubrication, repairs, and capital replacement.

Regional differences between the low- and high-cost farms must be considered in interpreting these results. The differences in input use not only reflect differences in production practices but also soils, climates, infestations, and capitalization. Farms may have high per-bushel costs as a result of a poor crop year or farm expansion.

These results represent a starting point for further analysis. FLBG crop or livestock budget data can be com-

bined with data on other aspects of the farm operation to analyze relationships between farm-level costs and such factors as farm and operator characteristics, financial characteristics, production practices, land tenure, and resource use.

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Appendix table 1--Farm income, assets and debt, and returns 1/

Item	1984	1985	1986	1987	1988F	1989F
			Billion dollars			
Income and total returns						
1. Gross farm income 2/	163	155	150	161	162	174 to 179
2. Wages and perquisites to hired labor	9	9	9	9	10	10 to 11
3. Other operating expenses, excluding interest	80	76	69	72	79	80 to 85
4. Capital consumption	19	17	16	14	15	14 to 15
5. Net income from assets and operators'labor and management (1-2-3-4)	55	54	56	64	58	65 to 70
6. Income imputed to operators' labor and management	27	23	20	25	26	25 to 27
7. Residual income to assets (5-6)	28	30	36	39	32	40 to 43
8. Real capital gain to assets	-129	-100	-62	-2	4	-8 to -10
9. Total return from assets (7+8)	-100	-70	-26	37	36	30 to 35
10. Interest paid	20	18	16	15	15	15 to 16
11. Real capital gain to debt	7	6	4	7	6	5 to 6
12. Total return to equity (9-10+11)	-113	-82	-38	29	27	20 to 25
13. Real capital gain to assets and debt (8+11)	-122	-94	-58	4	10	-3 to -4
14. Residual income to equity (12-13)	8	12	20	24	17	23 to 29
Balance sheet 3/						
15. Assets	849	749	692	709	741	755 to 765
16. Debt	191	175	155	143	139	139 to 147
17. Equity (15-16)	658	574	536	566	602	612 to 622
			Percent			
Rates of return and interest rates						
18. Rate of return on assets (ROA) (7/15)	3.2	3.8	5.0	5.6	4.4	5 to 6
19. Real capital gain on assets (8/15)	-14.3	-12.6	-8.6	-.3	.5	-1 to -2
20. Total real return on assets (18+19)	-11.2	-8.8	-3.6	5.2	5.0	3 to 5
21. Av. interest rate paid on debt (10/16)	10.6	9.8	9.8	10.0	10.8	10 to 12
22. Real capital gains on debt (11/16)	3.7	3.2	2.5	4.5	4.2	3 to 5
23. Real cost of debt (21-22)	6.9	6.6	7.3	5.5	6.6	6 to 8
24. Rate of return on equity (ROE) ((7-10)/17)	1.2	2.0	3.6	4.4	2.9	4 to 5
25. Real capital gain on equity ((8+11)/17)	-17.2	-15.3	-10.5	.8	1.7	-1 to 0
26. Total real return on equity (24+25)	-16.1	-13.3	-6.9	5.2	4.6	3 to 5
27. Net return on assets (NROA) (18-21)	-7.4	-6.0	-4.8	-4.4	-6.3	-4 to -7
28. Spread (20-23) 4/	-18.1	-15.4	-10.9	-.3	-1.6	-1 to -4

F = Forecast. 1/ Numbers may not add due to rounding. 2/ Excludes operator dwellings. 3/ Excludes operator households and CCC activity. 4/ When total real rate of return on assets exceeds total real cost of debt, debt financing is profitable.

Appendix table 2--Farm income and cash flow statement, 1984-89

Item	1984	1985	1986	1987	1988F	1989F
	Billion dollars					
Farm income sources:						
1. Cash receipts	142.4	144.0	135.1	138.1	149	148 to 152
Crops 1/	69.5	74.2	63.6	61.9	69	69 to 72
Livestock	73.0	69.8	71.5	76.2	80	79 to 82
2. Direct Government payments	8.4	7.7	11.8	16.7	14	10 to 12
Cash Government payments	4.0	7.6	8.1	6.7	8	7 to 9
Value of PIK commodities	4.5	.1	3.7	10.1	6	2 to 4
3. Farm-related income 2/	4.4	5.0	5.1	5.6	6	5 to 7
4. Gross cash income (1+2+3) 3/	155.2	156.8	152.0	160.4	169	165 to 169
5. Nonmoney income 4/	13.4	11.8	10.6	10.0	9	8 to 10
6. Realized gross income (4+5)	168.6	168.6	162.6	170.4	178	174 to 178
7. Value of inventory change	6.3	-2.4	-2.8	-.6	-8	8 to 10
8. Total gross income (6+7)	174.9	166.2	159.8	169.8	170	182 to 187
Production expenses:						
9. Cash expenses 5/ 6/	116.6	110.2	100.6	103.3	111	115 to 118
10. Total expenses	142.7	134.0	122.3	123.5	132	136 to 140
Income statement:						
11. Net cash income: 1/ 6/						
Nominal (4-9)	38.7	46.6	51.4	57.1	57	48 to 52
Deflated (1982$) 7/	35.9	41.9	45.0	48.6	48	38 to 42
12. Net farm income: 1/						
Nominal total net (8-10)	32.2	32.3	37.5	46.3	39	44 to 48
Deflated (1982$) 7/	29.9	29.0	32.8	39.4	32	36 to 40
13. Off-farm income	38.9	42.6	44.6	46.8	49	48 to 51
Other sources and uses of funds:						
14. Change in loans outstanding 6/	-1.9	-15.6	-19.9	-12.6	-3	2 to 5
Real estate	-1.1	-6.0	-9.2	-7.7	-4	0 to 3
Nonreal estate 8/	-.8	-9.6	-10.7	-4.9	1	2 to 3
15. Rental income and monetary change	8.9	8.8	7.8	6.8	8	7 to 9
16. Gross cash flow (11+14+15)	45.7	39.8	39.3	51.3	63	60 to 64
17. Capital expenditures 6/	12.5	9.6	8.6	9.8	10	9 to 11
18. Net cash flow (16-17) 1/ 6/	33.2	30.2	30.7	41.5	53	50 to 54

F = Forecast. Totals may not add due to rounding. 1/ Includes net CCC loans. 2/ Income from custom work, machine hire, farm recreational activities, forest product sales, and misc. sources. 3/ Numbers in parentheses indicate components required to calculate a given item. 4/ Value of home consumption of farm products and imputed rental value of farm dwellings. 5/ Excludes depreciation and hired labor perquisites. 6/ Excludes farm households. 7/ Deflated by the GNP implicit price deflator. 8/ Excludes CCC loans.

Appendix table 3--Relationship of net cash to net farm income

Item	1984	1985	1986	1987	1988F	1989F
	Billion dollars					
Gross cash income	155.2	156.8	152.0	160.4	169	165 to 169
Minus: Cash expenses	116.6	110.2	100.6	103.3	111	115 to 118
Equals: Net cash income	38.7	46.6	51.4	57.1	57	48 to 52
Plus: Nonmoney income:						
Gross rental value of dwelling	12.3	10.9	9.7	9.1	12.5	8 to 9
Value of home consumption	.9	.9	.9	.9	1.1	0 to 1
Value of inventory change	6.3	-2.4	-2.8	-.6	-8	8 to 10
Minus: Noncash expenses:						
Depreciation & capital consumption	23.1	20.9	18.9	17.3	23.9	16 to 18
Labor perquisites	.5	.5	.4	.5	.7	0 to 1
Minus: Household expenses:						
Interest	.9	.8	.7	.6	.9	0 to 2
Taxes	.3	.3	.3	.3	.3	0 to 1
Repairs	.4	.5	.5	.3	.4	0 to 2
Insurance	.9	.9	.9	.9	.9	0 to 2
Equals: Net farm income	32.2	32.3	37.5	46.3	39	44 to 48

F = Forecast.

Appendix table 4--Cash receipts, 1984-89

Item	1984	1985	1986	1987	1988F	1989F
	Billion dollars					
Crop receipts: 1/						
Food grains	9.7	9.0	5.6	5.4	7	7 to 10
Wheat	8.6	7.9	4.9	4.9	6	6 to 8
Rice	1.1	1.0	.7	.5	1	0 to 2
Feed grains and hay	15.7	22.5	17.0	13.1	13	13 to 16
Corn	10.5	16.9	12.5	8.8	9	9 to 11
Sorghum, barley, and oats	2.9	3.3	2.3	2.0	2	1 to 3
Hay (all)	2.3	2.3	2.2	2.3	2	1 to 3
Oil crops	13.6	12.5	10.6	10.8	14	13 to 15
Soybeans	12.0	11.2	9.2	9.6	13	11 to 13
Peanuts	1.2	1.0	1.1	1.0	1	1 to 2
Cotton lint and seed	3.7	3.7	3.6	4.0	5	2 to 5
Tobacco	2.8	2.7	1.9	1.8	2	1 to 3
Fruits and nuts	6.7	6.8	7.3	7.9	9	7 to 10
Vegetables	9.1	8.6	8.6	9.2	9	8 to 10
Greenhouse & nursery	5.2	5.4	5.8	6.4	6	6 to 8
Other crops 1/	3.3	3.2	3.4	3.1	3	2 to 4
TOTAL CROPS	69.5	74.2	63.6	61.9	69	69 to 72
Livestock receipts:						
Red meats	40.8	38.6	39.1	44.7	47	45 to 49
Cattle	28.7	27.0	26.9	31.2	34	32 to 35
Calves	2.0	2.1	2.0	2.6	3	2 to 4
Hogs	9.7	9.0	9.7	10.3	9	9 to 11
Sheep and lambs	.5	.5	.5	.6	*	0 to 1
Poultry and eggs	12.2	11.2	12.7	11.5	13	13 to 15
Broilers	6.0	5.7	6.8	6.2	8	6 to 9
Turkeys	1.7	1.8	2.0	1.7	2	1 to 3
Eggs	4.1	3.3	3.5	2.9	3	2 to 4
Other poultry	.5	.5	.4	.4	*	0 to 1
Dairy products	17.9	18.1	17.8	17.8	17	15 to 20
Wholesale milk 2/	17.7	17.8	17.5	17.6	17	15 to 20
Other livestock	2.0	1.9	1.9	2.2	2	1 to 3
TOTAL LIVESTOCK	73.0	69.8	71.5	76.2	80	79 to 81
TOTAL RECEIPTS	142.4	144.0	135.1	138.1	149	148 to 152
Program 3/	62.2	67.6	56.3	51.5	62.9	53 to 58
Non-program 4/	80.2	76.6	78.9	84.6	73.7	82 to 87

F = Forecast. * = Less than $500 million. Totals may not add due to rounding. 1/ Includes sugar, seed, and other misc. crops. 2/ Milk receipts do not reflect price deductions levied on marketings. 3/ Receipts from commodities directly supported by farm programs. 4/ Commodities not receiving direct support.

Appendix table 5--Farm income distribution by enterprise type 1/

Item	Crops					Livestock		
	Total crops	Cash grain 2/	Tobacco	Cotton	Fruit, nut, vegetables	Total livestock	Red meat	Dairy
	Thousands							
Number of farms								
1987	881	436	89	25	83	1,295	890	178
1988F	856	422	87	25	80	1,258	865	173
1989F	833	412	84	24	78	1,225	842	168
Income								
1. Cash receipts:	Million dollars							
Crops								
1987	56,189	21,220	1,743	4,046	15,538	5,643	3,851	801
1988F	62,800	25,800	1,800	5,000	16,000	6,600	4,500	900
1989F	63,000	27,000	2,000	3,000	16,000	7,000	5,000	1,000
Livestock								
1987	4,742	2,994	226	71	106	71,469	35,273	20,487
1988F	5,000	3,100	300	100	100	74,300	37,300	19,800
1989F	3,000	3,000	*	*	*	74,000	36,000	20,000
2. Direct Gov't payments:								
1987	12,058	9,346	108	1,109	70	4,688	3,153	880
1988F	10,500	8,100	100	1,100	100	4,000	2,700	1,000
1989F	8,000	6,000	*	1,000	*	3,000	2,000	1,000
3. Gross cash income: 3/								
1987	75,445	34,679	2,153	5,486	15,998	84,900	43,893	22,499
1988F	80,700	38,100	2,200	6,400	16,400	88,100	46,200	21,800
1989F	78,000	37,000	2,000	5,000	17,000	87,000	45,000	22,000
4. Cash expenses:								
1987	45,435	22,980	1,794	3,405	6,382	57,243	31,481	16,295
1988F	46,800	23,900	1,800	3,400	6,400	64,100	34,900	18,400
1989F	50,000	26,000	2,000	4,000	7,000	66,000	36,000	19,000
5. Net cash income:								
Current dollars 4/								
1987	30,010	11,698	359	2,081	9,617	27,657	12,413	6,203
1988F	33,900	14,200	400	3,000	10,000	24,100	11,300	3,400
1989F	28,000	12,000	*	1,000	10,000	21,000	9,000	3,000
Deflated (1982 $)								
1987	25,497	9,939	305	1,768	8,171	23,498	10,547	5,270
1988F	27,900	11,700	300	2,500	8,200	19,800	9,300	2,800
1989F	22,000	9,000	*	1,000	8,000	20,000	9,000	2,000
Balance Sheet								
6. Farm assets:								
Real estate								
1987	223,946	104,944	10,818	7,837	36,584	298,631	203,720	51,792
1988F	230,900	108,200	11,200	8,100	37,700	307,900	210,000	53,400
1989F	240,000	113,000	12,000	8,000	39,000	321,000	219,000	56,000
Nonreal estate								
1987	73,557	45,472	2,827	3,559	6,143	112,761	66,275	31,894
1988F	70,900	43,400	2,800	3,500	6,000	114,300	67,100	32,400
1989F	74,000	46,000	3,000	4,000	6,000	116,000	68,000	33,000
7. Total liabilities:								
1987	70,400	41,620	2,034	4,862	7,651	72,293	38,126	24,886
1988F	69,400	41,000	2,000	4,800	7,500	71,000	37,600	24,600
1989F	65,000	38,000	2,000	5,000	7,000	67,000	36,000	23,000
	Percent							
8. Debt-to-asset ratio:								
1987	23.7	27.7	14.9	42.7	17.9	17.6	14.1	29.7
1988F	23.0	27.0	14.5	41.7	17.2	16.9	13.6	28.7
1989F	20.7	24.2	13.2	37.4	15.6	15.5	12.5	26.0

F = Forecast. * = Less than $500 million (all 1989 forecasts are rounded to the nearest $1 billion). Numbers may not add due to rounding. 1/ Farm types are defined as those with 50 percent or more of all sales accounted for by a specific commodity or commodity group. 2/ Includes farms earning at least half their receipts from sales of wheat, corn, soybeans, rice, sorghum, barley, oats, or a mix of cash grains. 3/ Equals 1 + 2 + farm related income. 4/ Equals 3 - 4.

Appendix table 6--Farm production expenses, 1984-89

Item	1984	1985	1986	1987	1988F	1989F
	Billion dollars					
Farm-origin inputs	32.8	30.3	28.9	31.1	38	36 to 40
Feed	19.9	18.0	16.2	16.1	22	20 to 24
Livestock	9.5	9.0	9.7	12.0	13	11 to 14
Seed	3.4	3.4	3.0	3.0	3	3 to 4
Manufactured inputs	21.5	21.0	17.0	16.8	17	18 to 22
Fertilizer	7.4	7.3	5.8	5.4	6	6 to 8
Fuels and oils	7.1	6.6	4.8	4.4	4	4 to 6
Electricity	2.2	2.1	2.1	2.4	3	2 to 3
Pesticides	4.8	5.0	4.3	4.6	5	5 to 6
Total interest charges	21.1	18.7	16.9	15.5	16	15 to 17
Short-term interest	10.4	8.8	7.8	7.3	8	7 to 9
Real estate interest	10.7	9.9	9.1	8.2	8	7 to 9
Other operating expenses	31.4	30.6	29.6	31.3	31	32 to 36
Repair and maintenance	6.4	6.4	6.4	6.5	7	7 to 8
Labor expenses	9.7	9.8	9.9	10.7	11	11 to 13
Machine hire & custom work	2.2	2.2	1.8	2.0	2	2 to 3
Animal health	1.3	1.2	1.2	1.2	1	1 to 2
Marketing, storage & transportation	4.0	4.1	3.7	3.8	3	4 to 5
Miscellaneous operating expenses	7.8	6.9	6.7	7.1	7	6 to 7
Other overhead expenses	35.8	33.2	29.7	28.7	29	28 to 31
Capital consumption	23.1	20.8	18.9	17.3	18	17 to 18
Taxes	4.1	4.2	4.1	4.3	4	4 to 5
Net rent to nonoperating landlords	8.6	8.2	6.7	7.0	7	7 to 8
TOTAL PRODUCTION EXPENSES	142.7	134.0	122.3	123.5	132	136 to 140
Cash expenses 1/	116.6	110.2	100.6	103.3	111	115 to 118

F = Forecast. 1/ Cash expenses equal total expenses minus depreciation, operator dwelling expenses, and noncash labor benefits.

Appendix table 7a--Balance sheet of the farming sector, excluding operator households, December 31

Item	1984	1985	1986	1987	1988F	1989F
	Billion dollars					
Farm assets	848.5	749.0	691.6	708.9	741	755 to 765
Real estate 1/	639.6	558.6	510.1	522.6	553	560 to 570
Livestock and poultry	49.6	46.3	47.6	57.6	61	60 to 64
Machinery and motor vehicles	96.9	87.6	80.3	73.9	74	74 to 78
Crops stored 2/	29.6	23.5	19.1	20.5	18	18 to 22
Financial assets 3/	32.8	33.0	34.4	34.3	35	35 to 37
Farm debt	190.8	175.2	155.3	142.7	143	139 to 147
Real estate 4/	103.7	97.7	88.5	80.8	78	76 to 80
Nonreal estate	87.1	77.5	66.8	61.9	65	63 to 67
Total farm equity	657.7	573.8	536.3	566.3	617	612 to 622
	Percent					
Selected ratios:						
Debt-to-asset	22.5	23.4	22.5	20.1	18.8	18 to 20
Debt-to-equity	29.0	30.5	29.0	25.2	23.1	22 to 24
Debt-to-net cash income	493.2	376.2	302.2	250.1	241	280 to 290

F = Forecast. 1/ Excludes value of operator dwellings. 2/ Non-CCC crops held on farm plus value above loan rate for crops held under CCC. 3/ Excludes time deposits and savings bonds. 4/ Includes CCC storage and drying loans.

Appendix table 7b--Balance sheet of the farming sector, including operator households, December 31

Item	1984	1985	1986	1987	1988F	1989F
	Billion dollars					
Farm assets	949.7	845.4	789.4	813.1	850	868 to 878
Real estate	693.7	606.4	554.0	567.2	599	610 to 620
Livestock and poultry	49.6	46.3	47.6	57.6	61	60 to 64
Machinery and motor vehicles	102.7	92.4	84.4	78.6	79	79 to 83
Crops 1/	29.6	23.5	19.1	20.5	18	18 to 22
Household goods	26.1	27.8	30.5	33.3	35	35 to 37
Financial assets	47.9	49.0	53.8	55.9	58	57 to 61
Farm debt	204.4	188.0	166.8	153.3	150	149 to 157
Real estate 2/	112.4	105.9	95.8	87.4	83	82 to 86
Nonreal estate	92.0	82.2	71.0	65.9	67	67 to 71
Total farm equity	745.2	657.3	622.6	659.8	700	715 to 725
	Percent					
Selected ratios:						
Debt-to-asset	21.5	22.2	21.1	18.9	17.6	17 to 18
Debt-to-equity	27.4	28.6	26.8	23.2	21.4	20 to 22
Debt-to-net cash income	528.5	403.7	324.6	268.7	260	300 to 310

F = Forecast. 1/ Non-CCC crops held on farm plus value above loan rate for crops held under CCC. 2/ Includes CCC storage and drying loans.

Appendix table 8--Farm financial ratios: liquidity, solvency, profitability, and financial efficiency

Farm financial ratios:	1981	1982	1983	1984	1985	1986	1987	1988F	1989F
					Ratio				
Liquidity ratios:									
Household debt service coverage 1/	2.76	2.77	2.75	2.87	3.45	4.03	4.74	5.0	4.5 to 4.7
Farm business debt service coverage 2/	1.66	1.74	1.70	1.76	2.12	2.47	2.91	3.0	2.6 to 2.6
Debt servicing 3/	0.21	0.23	0.22	0.22	0.19	0.18	0.15	0.1	0.1 to 0.2
Times interest earned ratio 4/	2.57	2.26	1.80	2.72	2.95	3.46	4.26	3.7	4.1 to 4.2
					Percent				
Solvency ratios:									
Debt/asset 5/	18.3	19.7	20.4	22.5	23.4	22.5	20.1	19	18 to 20
Debt/equity 6/	22.4	24.6	25.6	29.0	30.5	29.0	25.2	23	22 to 24
					Percent				
Profitability ratios:									
Return on equity 7/	0.4	0.1	-1.3	1.2	2.0	3.6	4.4	2.9	4 to 5
Return on assets 8/	2.2	2.2	1.1	3.2	3.8	5.0	5.6	4.4	5 to 6
Net farm to gross cash farm income 9/	18.4	15.6	8.4	20.8	20.6	24.7	28.8	22.9	27 to 29
					Percent				
Financial efficiency ratios:									
Gross ratio 10/	77.6	74.9	75.5	75.1	70.3	66.2	64.4	65.8	69 to 71
Interest to gross cash farm income 11/	13.1	13.9	13.7	13.1	11.4	10.7	9.3	9.0	9 to 10
Asset turnover 12/	14.7	15.4	15.8	17.3	19.6	21.1	22.9	23.3	21 to 23
Net cash farm income to debt ratio 13/	29.7	31.6	30.1	30.8	35.3	40.9	48.3	51.8	46 to 47
					Ratio				
Financial leverage index 14/	0.16	0.03	-1.12	0.37	0.53	0.72	0.79	0.7	0.7 to 0.8

F= Forecast. 1/ Assesses the ability of farm sector households to repay both principal and interest. 2/ Assesses the ability of farm businesses to repay both principal and interest. 3/ Indicates the proportion of gross cash farm income needed to service debt. 4/ Shows the farm sector's ability to service debt out of net income. 5/ Shows the proportion of all assets that are financed with debt. 6/ Measures the relative proportion of funds provided by creditors(debt) and owners(equity). 7/ Measures the ability of farm sector management to realize an adequate return on the capital invested by the owner(s). 8/ Measures how efficiently managers use farm assets. 9/ The profit margin indicates profits earned per dollar of gross income. 10/ Gives the portion of gross cash farm income absorbed by production expenses (claims on farm businesses). 11/ Gives the proportion of gross cash farm income committed to interest payments. 12/ Measures the gross farm income generated per dollar of farm business assets. 13/ Indicates the burden placed on net cash farm income to retire outstanding debt. 14/ Indicates whether or not the use of financial leverage is beneficial.

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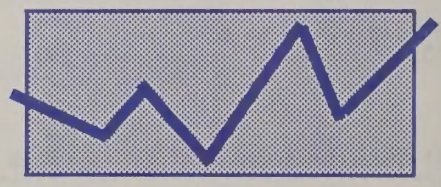

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